ROY
6660

HARVARD UNIVERSITY.

LIBRARY

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY.

7256.
Exchange.
Sept. 18, 1903 — Feb. 23, 1904.

FEB 23 1904

TRANSACTIONS AND PROCEEDINGS

AND

REPORT

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA

(INCORPORATED).

VOL. XXVII.

[WITH TWO PLATES.]

EDITED BY WALTER HOWCHIN, F.G.S.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

DECEMBER, 1903.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs Thos. Meadows & Co., 34, Milk Street, Cheapside, London."

Royal Society of South Australia,

INCORPORATED.

Patron:

HIS EXCELLENCY LORD TENNYSON
(GOVERNOR-GENERAL OF THE COMMONWEALTH OF AUSTRALIA).

OFFICERS for 1903-4.

President:

JOSEPH C. VERCO M.D., F.R.C.S.

Vice-Presidents:

PROF. E. H. RENNIE, M.A., D.Sc.
REV. THOMAS BLACKBURN, B.A.

Hon. Treasurer:

WALTER RUTT, C.E.

Hon. Secretary and Sealholder:

G. G. MAYO, C.E.

Members of Council:

SAMUEL DIXON
W. H. SELWAY
PROF. E. C. STIRLING, M.A., M.D., F.R.S., C.M.G.
W. L. CLELAND, M.B.
W. HOWCHIN, F.G.S. (Editor and Representative Governor)
E. ASHBY

Auditor:

J. S. LLOYD.

CONTENTS.

PART I. (Issued July, 1903).

PAGE.

TURNER, DR. A. JEFFERIS: New Australian Lepidoptera, with Synonomic and other Notes 1

LOWER, OSWALD B.: Descriptions of New Australian Noctuina, &c.... 27

HOWCHIN, WALTER: Further Notes on the Geology of Kangaroo Island 75

BLACKBURN, REV. T.: Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species (xxxii.) 91

PART II. (Issued December, 1903.)

LOWER, O. B.: Descriptions of New Genera and Species of Australian Lepidoptera 183

HIGGIN, A. J.: An Analysis of the Ash of *Acacia salicina* 202

RENNIE, PROF., and A. J. HIGGIN: Notes on Supposed Volcanic Dust from the Northern Territory 205

WOOLNOUGH, W. G.: Microscopical Examination of Supposed Volcanic Dust from the Northern Territory 207

DENNANT, J.: Descriptions of New Species of Corals from the Australian Tertiaries. Plates I. and II. 208

LOWER, O. B.: Descriptions of New Species of Xysmatodoma, &c. ... 216

MAIDEN, J. H.: On *Eucalyptus odorata* 240

JOHNCOCK, C. F.: Notes on *Loranthus exocarpi* 253

GARTRELL, H. W.: The Port Victor Granite 256

BLACKBURN, REV. T.: Further Notes on Australian Coleoptera with Descriptions of New Genera and Species (XXXIII.) 261

ABSTRACT OF PROCEEDINGS 310

ANNUAL REPORT 316

BALANCE SHEET 318

PRESIDENT'S ADDRESS 319

DONATIONS TO THE LIBRARY 330

LIST OF FELLOWS, &c. 338

PROCEEDINGS, ANNUAL REPORT, AND BALANCE SHEET OF THE FIELD NATURALISTS' SECTION 341

REPORT OF THE NATIVE FAUNA AND FLORA PROTECTION COMMITTEE 344

REPORT OF THE MALACOLOGICAL SECTION 346

RULES AND BY-LAWS OF THE SOCIETY 347

Sept. 15, 1903.
7256

TRANSACTIONS

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. XXVII., Part I.

EDITED BY WALTER HOWCHIN, F.G.S.

ISSUED JULY, 1903.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs. Thos. Meadows & Co., 34, Milk Street, Cheapside, London."

New Australian Lepidoptera, with Synonomic and other Notes.

By A. Jefferis Turner, M.D., F.E.S.

[Read May 5, 1903]

Fam. NOCTUIDÆ.

Sub-fam. Agaristinæ.

Though a very natural group, this cannot, I believe, be separated from the *Noctuidæ* by any single structural character, and it is therefore, I consider, best treated as a sub-family. Sir Geo. Hampson restricts the *Agaristidæ* to those genera having antennæ more or less dilated before apex, but I do not think this is a natural line of division.

Cruria synopla, *n. sp.*

(*Sunoplos*, allied).

Male and female, 46-54 mm. Differs from *Cruria donovani*, Bdv., as follows:—Wings with markings of a deeper shade of ochreous; spots on forewings smaller, basal and subapical spots nearly obsolete; spots beneath end of cell, and to a less extent than in cell, obscured by dark fuscous irroration; basal subcostal streak reduced to a thin row of scales; a well-marked narrow streak from base of dorsum parallel to basal half of lower edge of cell; cilia with white bars less marked and obsolete in apical half of termen of forewing. A fine ochreous line across thorax connects the dorsal streaks of the forewings.

This species has been confused with *C. donovani*, and I can understand naturalists who are not acquainted with both forms in their natural state doubting their distinctness. Both forms are constant in their markings, and the median basal streak of forewings of the present species distinguishes it at once. Boisduval's description of *C. donovani* would apply to either species, but Herrich-Schaeffer's accurate figure is certainly *donovani*, as is also Butler's figure (Ill. Het., B.M., I., Pl. iv., f. 7), but Hampson's woodcut of *donovani* (Cat. Lep. Phal., III., p. 546) is taken from an example of *synopla*.

Both species occur on the coast of Southern Queensland, *synopla* being especially abundant. *Donovani* is abundant on the Darling Downs, but I have not observed the former there.

Mr. Illidge informs me that the larvæ of *synopla* feed on *Colocasia*.

Type in coll. Turner.

Queensland, Nambour, Brisbane, Mt. Tambourine.

N.S. Wales, Ballina (Richmond River); from November to March.

Gen. IDALIMA, nov.

(*Eidalimos*, comely.)

Head with an anterior rounded protuberance. Palpi moderate, obliquely ascending; second joint densely hairy beneath; terminal joint short, naked, obtuse. Antennæ in male simple, shortly and evenly ciliated. Thorax and abdomen not crested. Middle and posterior tibiæ not hairy on upper surface. Forewings with vein 2 from posterior fifth of cell; 7, 8, 9 stalked, 10 from areole. Hindwings with 3 and 4 closely approximated at base, 5 from middle of cell, 6 and 7 connate.

Distinguished from *Apina*, Wlk., by the rounded frontal protuberance, the simple non-serrated male antennæ, and the smooth mid and posterior tibiæ.

Type *Agarista affinis*, Bdv. I also refer *maculosa*, Roths., to this genus.

Gen. COENOTOCA, nov.

(*Koinotokos*, of common descent.)

Head with a strong conical obtusely-pointed frontal process. Palpi moderate, porrect or slightly ascending; second joint clothed with dense hairs beneath; terminal joint short, naked, obtuse. Antennæ in male serrate, shortly and evenly ciliated. Thorax clothed with very long hairs above. Abdomen with dorsal crests on proximal segments, that on first segment rather large. Mid and posterior tibiæ hairy on upper surface. Forewings with vein 2 from terminal fifth of cell, 7, 8, 9 stalked, 10 from areole. Hindwings with 3 and 4 closely approximated at base, 5 from middle of cell, 6 and 7 connate.

Differs from the preceding in the differently-shaped frontal process, serrated antennæ of the male, and in the presence of abdominal crests.

COENOTOCA MONOPHYES, *n. sp.*

(*Monophues*, simple.)

Male, 30-32 mm. Head blackish, lower edge of face and a pair of spots behind antennæ whitish. Palpi blackish, second joint beneath whitish at base and apex. Antennæ blackish. Thorax dark-fuscous. Abdomen dark-fuscous; apices of segments bright-ochreous, more broadly so on sides, white beneath. Legs dark-fuscous, annulated with white. Forewings triangular, costa nearly straight, apex round-pointed, termen rounded, moderately

oblique; dark-fuscous; a conspicuous white fascia from three-fifths costa to tornus, slightly dilated in disc, and contracted at tornus; cilia dark-fuscous. Hindwings with termen rounded; blackish; cilia blackish. Under surface like upper surface, but forewings with white spots at base and end of cell, and hindwings with a discal and tornal white spot, and some white irroration near base.

Type in coll. Turner.

N.S. Wales, Ballina (Richmond River); two specimens received from Mr. G. A. Waterhouse.

Sub-fam. Caradrininæ.

Section Agrotinæ.

Canthylidia eodora.

Heliothis eodora, Meyr., Tr. E.S, 1902, p. 26.
Canthylidia tenuistria, Turn, P.L.S., N.S.W., 1902, p. 79.
Queensland, Brisbane. N.S. Wales, Sydney (?).

Heliothis punctifera.

Heliothis punctifera, Wlk., Brit. Mus. Cat., XI., p. 691.
Heliothis leucatma, Meyr., Tr. E.S., 1897, p. 368.
North Queensland, Ravenswood. Queensland, Brisbane, Dalby. Victoria, Melbourne. N.S. Wales, Broken Hill.

Buciara bipartita.

Buciara bipartita, Wlk., Char. Undes. Lep., p. 36 (*teste* Hampson).
Actinotia acmophora, Meyr., Tr. E.S., 1897, p. 370.
Victoria, Melbourne.

Section Mamestrinæ.

Mamestra xanthocosma, *n. sp.*

(*Xanthocosmos*, ornamented with yellow.)

Male, 27 mm. Head, thorax, palpi, and antennæ brownish-fuscous. Abdomen grey-whitish. Legs brownish-fuscous. Forewings elongate-triangular; brownish-fuscous; basal, antemedian, and postmedian transverse lines paler, partly outlined with dark-fuscous; a broad median ochreous-yellow streak between basal and antemedian lines, followed by a small dark-fuscous suffusion; a dark-fuscous suffusion on dorsum beneath streak; orbicular obsolete; reniform ochreous-yellow in upper two-thirds, slenderly outlined with dark-fuscous; a broad ochreous-yellow streak above dorsum from postmedian line halfway to termen; an obscure dentate pale subterminal line; cilia brownish-fuscous. Hindwings

with termen sinuate beneath apex; whitish, towards costa, apex, and termen suffused with grey; cilia grey, with a whitish basal line, on tornus and inner margin whitish.

Type in coll. Agricultural Department, Queensland.

Queensland (?); one specimen without locality.

Leucania acontosema, *n. sp.*

(*Akontosemos*, marked with a dart—in allusion to the basal streak.)

Male, 40 mm. Head, thorax, palpi, and antennæ grey-whitish. Abdomen whitish. Legs pale-grey, mixed with whitish. Forewings elongate-triangular, grey-whitish, a blackish median streak from base to one-fourth, a blackish dot on costa at one-eighth, a second at one-fourth, and a third at five-eighths; antemedian line dark-fuscous, dentate, partly obscured, from second costal dot to dorsum at one-third; orbicular and reniform pale, surrounded by a fuscous suffusion; postmedian line dark-fuscous, interrupted, from third costal dot, at first strongly outwardly-curved, then slightly inwardly curved to dorsum at two-thirds; an interrupted dark-fuscous terminal line, forming a series of wedge-shaped dots; cilia whitish, with a broad median fuscous line. Hindwings with termen sinuate beneath apex; whitish, towards termen suffused with grey; cilia white.

Type in Queensland Museum.

Queensland, Rockhampton; one specimen.

Section Caradrininæ.

Caradrina reclusa.

Prodenia reclusa, Wlk., J. Linn. S., VI., p. 185 (1862).
Caradrina heliarcha, Meyr., Tr. E.S., 1897, p. 370.
North Queensland, Townsville. Queensland, Brisbane.

Caradrina acallis, *n. sp.*

(*Akallis*, without beauty.)

Male and female, 27 mm. Head, thorax, and palpi ochreous-whitish, irrorated with fuscous. Antennæ fuscous. Abdomen pale-grey. Legs grey. Forewings elongate-triangular; whitish, suffused with fuscous—the suffusion is darker in median part of disc from base to termen; basal and antemedian lines obsolete; orbicular and reniform represented by well-marked blackish spots, with an intervening pale spot; postmedian line slender, dark-fuscous from two-thirds costa to two-thirds dorsum, slightly waved; a blackish median longitudinal streak beyond this; cilia pale-fuscous. Hindwings with termen rounded, whitish; cilia whitish.

Type female in coll. Turner. There is a male in the Queensland Museum.

Queensland, Brisbane, in April; two specimens.

Caradrina poliocrossa, *n. sp.*

(*Polios*, grey; *krossos*, a border—grey-margined).

Male, 28 mm. Head brownish. Palpi whitish; external surface, except towards apex, dark-fuscous. Antennæ fuscous. Thorax grey, slightly purplish-tinged; collar dark-fuscous. Abdomen grey. Forewings elongate-triangular; purplish-grey, partly suffused with chestnut-brown; the brown suffusion is best marked in posterior part of disc, where it is sharply defined in a slightly wavy line from shortly before apex to shortly before tornus, leaving a grey terminal band; antemedian and postmedian lines double, fuscous, dentate towards dorsum; orbicular and reniform faintly indicated, the latter containing a few white scales; a fine interrupted dark-fuscous terminal line; cilia brownish-fuscous, with an interrupted grey-whitish median line. Hindwings with termen slightly sinuate; grey; cilia whitish, mixed with grey.

Type in the Queensland Museum.

West Australia, Albany; one specimen.

Diphthera beryllodes, *n. sp.*

(*Berullodes*, like a green jewel.)

Male, 38 mm. Head bluish-green. Palpi ochreous-whitish; external surface mixed with dark-fuscous. Antennæ fuscous. Thorax bluish-green; anterior surface of anterior crest brownish-fuscous; a few dark-fuscous scales in posterior crests and apices of patagiæ. Abdomen whitish-ochreous, segments slenderly outlined with fuscous; first dorsal crest bluish-green, the others dark-fuscous. Legs dark-fuscous, annulated with ochreous-whitish; upper half of external surface of anterior and middle tibiæ bluish-green. Forewings triangular, clear bluish-green, a dark-fuscous median dot near base, connected with a second dot, which lies between it and a semilunar spot on costa at one-sixth—the last is preceded and followed by a minute costal dot, and the disc between spots is suffused with white; orbicular represented by a white spot, and reniform by a white spot with black centre; a black spot on mid-costa, from which a suffused blackish line proceeds to mid-dorsum; an irregular fuscous subterminal fascia, constricted in middle, edged anteriorly first with black, then with white—this fascia gives off above middle a projection to termen; a series of blackish terminal dots; cilia bluish-green, barred with dark-fuscous. Hindwings with termen rounded;

whitish ochreous ; a large median spot and a broad terminal band dark-fuscous ; cilia as forewings.

Type in coll. Relton.

Queensland, Dulong (Blackall Range) ; one specimen taken by Mr. R. H. Relton.

Molvena guttalis.

Molvena guttalis, Wlk., Brit. Mus. Cat., XXXIV., p. 1,267.
Beyophila militata, Luc., P.R.S.Q., 1898, p. 71.

North Queensland, Townsville. Queensland, Brisbane, Killarney.

Sub-fam. Plusianæ.

Section Sarrothripinæ.

Gen. Amaloptila, nov.

(*Amaloptilos*, with feeble wings.)

Head with appressed scales, a triangular tuft of anteriorly projecting scales on face. Tongue well developed. Palpi stout, loosely scaled, obliquely ascending, not reaching above middle of face ; second joint rather long, terminal joint short, stout, truncate. Antennæ in male somewhat serrate, with short ciliations (1). Thorax and abdomen not crested. Forewings elongate, obovate ; retinaculum of male bar-shaped ; vein 2 from two-thirds, 3 from angle, 4 and 5 approximated at base from well above angle, 6 from near upper angle, 7, 8, 9 stalked, 10 free, 11 free, no areole. Hindwings with 3 and 4 stalked, 5 closely approximated at origin to 3 + 4, 6 and 7 separate, 8 anastomosing with cell to middle.

Amaloptila triorbis, *n. sp.*

(*Triorbis*, bearing three circles.)

Male, 34 mm. Head, thorax, palpi, and antennæ whitish-grey, with a few fuscous scales. Abdomen whitish. Legs, anterior pair whitish-grey, mixed with fuscous—middle and posterior pairs broken. Forewings elongate, obovate, costa strongly arched, apex rounded, termen obliquely rounded ; whitish-grey, with scattered fuscous scales and markings ; a short longitudinal streak from base beneath costa ; a line from one-sixth costa obliquely outwards to fold, thence inwardly curved tc one-sixth dorsum ; orbicular and reniform finely outlined ; a third circle in disc beneath and midway between these ; a postmedian line from costa at two-thirds, with an obtuse posterior projection in disc, thence inwardly oblique to dorsum at three-fifths ; a rather suffused subterminal line, indented above and below middle ; suffused longitudinal terminal streaks between veins; cilia whitish-grey. Hindwings with termen slightly sinuate beneath

apex, white, a grey terminal suffusion from apex not reaching tornus; cilia grey, towards tornus and on inner margin white.

Type in coll. Lyell.

N.S. Wales, Newcastle; one specimen.

Sarrothripa polycyma.

(*Polukumos*, with many waves.)

Sarrothripa polycyma, Turn,, Tr. R.S., S A., 1899, p. 17.

Sarrothripus crystallites, Meyr., Tr. E.S., 1902, p. 48.

Type in coll. Turner.

Queensland, Brisbane.

Hypothripa polia.

Hypothripa polia, Hmps., J, Bombay N.H.S., XI., p. 452 (1897).

Hypothripa vallata, Meyr., Tr. E.S., 1902, p. 47.

North Queensland, Townsville. Queensland, Brisbane.

Section Acontianæ.

Cymatophoropsis catagrapha, *n. sp.*

(*Katagraphos*, embroidered).

Male, 30 mm. Head and thorax fuscous-brown; face brownish-ochreous. Palpi fuscous-brown, inferiorly brownish-ochreous. Antennæ fuscous, in male shortly ciliated (one-half). Abdomen whitish, crests brownish-fuscous, terminal segment fuscous. Legs whitish, anterior pair and tarsi mixed with fuscous. Forewings elongate-triangular, costa slightly arched, apex round-pointed, termen obliquely rounded; retinaculum in male bar-shaped; fuscous-brown, partly mixed with dark-fuscous; markings ochreous-whitish; a broad basal streak, dilated at base, along fold to one-third, giving off two fine oblique streaks beneath, parallel to veins; a minute tuft of black scales rests on upper margin of this streak at one-sixth; a large oval apical blotch from three-fifths costa to apex, containing some brownish scales; a small triangular basal spot with brownish centre on dorsum before tornus; a series of minute ochreous-whitish terminal dots, prolonged in cilia, that above tornus is larger; cilia brownish. Hindwings with termen faintly waved, white, a large apical-fuscous suffusion; cilia whitish.

Referred to this genus provisionally and with some doubt.

Type in coll. Agricultural Department, Queensland.

North Queensland, Cairns; one specimen.

Carea plagioscia, *n. sp.*

(*Plagioskios*, obliquely shaded.)

Male, 40 mm. Head, thorax, and palpi dark-chestnut-brown. Antennæ fuscous, in male very shortly ciliated (one-quarter).

Abdomen fuscous. Legs pale-brownish, anterior pair fuscous; mid and hind femora and tibiæ densely clothed with long hairs; posterior tibiæ in male without spurs, but with a tuft of long hairs from extremity closely approximated to the very long and much dilated first joint of tarsus. Forewings sub-oblong, costa twice sinuate, apex acute, slightly produced, termen obtusely angled on vein 4; brownish, slightly purplish tinged; base of dorsum suffused with chestnut-brown; a straight oblique shade of dark-fuscous and brown scales from mid-costa to tornus; cilia brown. Hindwings with termen rounded, indented above tornus; dark-fuscous; cilia brownish, towards tornus fuscous. Underside of wings reddish brown, forewings suffused with fuscous, except towards costa and apex.

Type in Queensland Museum.

North Queensland, Geraldton (Johnstone River); one specimen.

Section Homopterinæ.

Thyas amideta, *n. sp.*

(*Ameidetos*, gloomy.)

Female, 68 mm. Head, thorax, palpi, and antennæ grey. Abdomen ochreous; basal segment grey. Legs grey. Forewings triangular, costa nearly straight, apex acute, termen straight, rounded beneath, slightly oblique; grey, with sparsely scattered dark-fuscous scales; markings dark-fuscous; a fine indistinct line from near base of costa to fold; a straight outwardly oblique antemedian line from one-fourth costa to one-third dorsum; a straight inwardly oblique postmedian line from three-fourths costa to two thirds dorsum; orbicular obsolete; reniform represented by a cluster of dark-fuscous dots; an obscure subterminal series of minute dots; cilia grey. Hindwings with termen rounded; fuscous, a suffused paler shade from tornus towards mid-costa, a narrow grey terminal suffusion not reaching to apex or tornus; cilia grey.

Allied to *Ophiusa coronata*, Fab., but hindwings without yellow.

Type in coll. Agricultural Department, Queensland.

North Queensland, Cairns; one specimen.

Thyas redunca.

Ophiusa redunca, Swin., Cat. Oxf. Mus., II., p. 141 (1900).

Thyas aellora, Meyr., Tr. E.S., 1902, p. 29.

Ophiusa trophidota, Turn., P.L.S., N.S.W., 1902, p. 95.

Queensland, Brisbane.

Thyas hicanora, *n. sp.*

(*Hikanoros*, becoming, seemingly.)

Male, 44 mm. Head, thorax, and palpi fuscous, tinged with ochreous. Antennæ grey. Abdomen dark-grey. Legs dark-grey. Forewings triangular, costa straight, slightly arched towards apex, apex round-pointed, termen rounded, slightly oblique, crenulate; fuscous, tinged with ochreous; a faint, fuscous, slightly sinuate antemedian line from one-fourth costa to one-third dorsum; a fuscous median dot; ground-colour sharply defined by a brownish postmedian line from three-fourths costa, slightly outwardly arched near costa, then straight to before tornus—this line is preceded by a dark-fuscous suffusion; beyond postmedian line disc is whitish-grey, with the exception of a triangular brownish suffusion from line to apex; a terminal series of minute blackish dots between crenulations; cilia fuscous, tinged with ochreous, on tornus whitish-grey. Hindwings with termen rounded, dark-fuscous, towards base paler; a suffused whitish oblique streak from inner margin at two-thirds, towards costa at one-third; a short white terminal line from beneath apex to vein 5; a narrow whitish suffusion from vein 3 to tornus; cilia fuscous, on terminal line white, on tornal suffusion whitish.

Type in coll. Turner.

North Queensland, Townsville, in February; one specimen received from Mr. F. P. Dodd.

Section Noctuinæ.

Polydesma auriculata, *n. sp.*

(*Auriculatus*, eared—in allusion to the complex fovea on forewing.)

Male, 31 mm. Head, thorax, and palpi dark-fuscous, irrorated with ochreous-whitish. Antennæ ochreous-whitish, annulated with black; in male simple. Abdomen fuscous. Legs dark-fuscous, mixed with ochreous-whitish. Forewings triangular, costa slightly arched near base, then straight; apex tolerably pointed, termen bowed, oblique; in male with two deeply excavated thinly-scaled foveas beneath costa towards base—on lower surface these form roundish projections with a deep fovea between, the whole overlapped by the long highly-developed retinaculum, and by a shorter ridge, on which is a short triangular process arising from median vein; dark-fuscous, mixed with ochreous-whitish, the dark scales tending to form transverse fasciæ; postmedian line obscure, dentate, from three-fourths costa to two-thirds dorsum, strongly sigmoid; an interrupted dark-fuscous terminal line; cilia dark-fuscous. Hindwings with termen rounded, slightly crenulate, fuscous; a faint postmedian

line, followed near tornus by a pale line; terminal line and cilia as forewings.

Type in coll. Illidge.

Queensland, Killarney, in November; one specimen.

Corula ischnodes, *n. sp.*

(*Ischnodes*, of meagre appearance.)

Male and female, 25-30 mm. Head and palpi fuscous-grey. Antennæ fuscous; in male with moderate ciliations ($1\frac{1}{2}$) and longer bristles ($2\frac{1}{2}$). Thorax grey. Abdomen fuscous-whitish. Legs grey, posterior pair whitish. Forewings elongate, costa rather strongly arched, apex rounded, termen obliquely rounded; grey, partly suffused with whitish-grey; most veins outlined with dark-fuscous; orbicular obsolete, reniform faintly indicated by a darker shade; antemedian and postmedian lines indicated in whitish-grey; a terminal series of dark-fuscous, very short, longitudinal streaks between veins; cilia grey. Hindwings with termen slightly sinuate; fuscous, towards base suffused with whitish; cilia whitish.

Type in coll. Lyell.

N.S. Wales, Sydney. Victoria, Kewell, Birchip. Six specimens.

Hyperlopha amicta, *n. sp.*

(*Amiktos*, unmixed, without markings.)

Female, 50 mm. Head, thorax, and palpi ochreous-grey, with a few sparsely scattered dark-fuscous scales. Antennæ ochreous-grey. Abdomen ochreous-grey. Legs ochreous-grey, with a few sparsely scattered dark-fuscous scales. Forewings triangular, costa slightly arched, apex acute, termen sigmoid beneath apex, not oblique, rounded beneath; pale-ochreous-grey, with a few sparsely scattered dark-fuscous scales; cilia concolorous. Hindwings with termen rounded; fuscous, basal third ochreous-whitish; cilia whitish.

Type in Queensland Museum.

North Queensland (?); one specimen without locality.

Section Erastrianæ

Tarache nivipicta.

Acontia nivipicta, Butl., Tr. E.S., 1886, p. 400.

Tarache clerana, Low, P.L.S., N.S.W., 1901, p. 658.

Tarache hieroglyphica, Low., P.L.S., N.S.W., 1901, p. 658.

I believe these forms are merely varietal; all three are taken commonly on the Queensland coast.

Queensland, Peak Downs, Brisbane, Dalby, Southport. N.S. Wales, Sydney, Broken Hill. N.W. Australia, Roeburne, Derby.

Xanthoptera albiceris, *n. sp.*

(*Albiceris*, whitish-yellow.)

Male, 17 mm. Head and palpi ochreous. Antennæ grey, towards base ochreous; in male moderately ciliated (1) with fine slightly longer bristles. Thorax and abdomen pale-ochreous. Legs pale-ochreous; anterior pair grey in front. Forewings triangular, costa slightly arched, apex rounded, termen rounded, slightly oblique; pale-ochreous without markings; cilia concolorous. Hindwings with termen slightly sinuate; pale-ochreous; cilia concolorous.

Type in coll. Turner.

North Queensland, Townsville, in May; one specimen received from Mr. F. P. Dodd. Queensland, Peak Downs; one specimen in British Museum.

Xanthoptera crocodeta, *n. sp.*

(*Krokodetos*, bound with saffron—in allusion to lines on wings.)

Male, 24 mm. Head and palpi purplish-grey. Antennæ grey, in male shortly ciliated (one-half), with longer bristles (1). Thorax purplish-grey, with a pale-ochreous transverse band behind collar. Abdomen purplish-grey. Legs purplish-grey, posterior pair whitish-ochreous. Forewings triangular, costa scarcely arched, apex round-pointed, termen bowed, oblique; purplish-grey; a pale-ochreous costal streak, narrowing to a point at apex; lines slender, ochreous, not crossing costal streak; antemedian line straight from beneath one-third costa to one-third dorsum; a transverse linear faintly darker median discal mark, edged posteriorly with ochreous; postmedian line straight from beneath two-thirds costa to three-fourths dorsum; subterminal line wavy to vein 5, thence sharply dentate on veins, and ending on tornus; veins towards termen finely outlined in ochreous; cilia purplish-grey, intersected by continuation of ochreous lines on veins. Hindwings with termen rounded; colour and markings as in forewings, but antemedian line obsolete towards inner margin, and discal mark obsolete.

Type in coll. Turner.

Queensland, Brisbane; one specimen received from Mr. R. Illidge.

Sandava xylistis.

Sandava xylistis, Swin., Cat. Oxf. Mus., II., p. 192 (1900).
Meyr., Tr. E.S., 1902, p. 37.
Type in Oxford Museum.

Queensland, Brisbane. Victoria, Melbourne. According to Swinhoe, also from Tasmania.

Eublemma hemirhoda.

Micra hemirhoda, Wlk., Brit. Mus. Cat., XXXIII., p. 799.
Thalpochares basilissa, Meyr., Tr. R.S., S.A., 1891, p. 196.
North Queensland, Townsville, in August; one specimen received from Mr. F. P. Dodd.

Rivula niphodesma.

Rivula nipho lesma, Meyr., Tr. R.S., S.A., 1891, p. 197.
Rivula proleuca, Holl., Nov. Zool.
North Queensland, Thursday Island, Cairns, Cardwell.
Also from Bourn.

Gen. Essonistis.

Meyr., Tr. E.S., 1902, p. 36. *Thelxinoa*, Turn., P.L.S., N.S.W., 1902, p. 131, is a synonym.

Essonistis micraeola.

Essonistis micraeola, Meyr., Tr. E.S., 1902, p. 36.
Thelxinoa calliscia, Turn., P.L.S., N.S.W., 1902, p. 133.
Queensland, Brisbane.

Gen. Trissernis.

Meyr., Tr. E.S., 1902, p. 37. *Bryomima*, Turn., P.L.S., N.S.W., 1902, p. 134, is a synonym.

Trissernis prasinoscia.

Trissernis prasinoscia, Meyr., Tr. E.S., 1902, p. 37.
Bryomima elaeodes, Turn., P.L.S., N.S.W., 1902, p. 134.
Queensland, Brisbane.

Section Hypeninæ.

I would suggest that the distinction between the *Erastrianæ* and *Hypeninæ* be based on the palpi, all genera with acutely-pointed palpi being placed in the latter group.

Pseudaglossa sordescens.

Bleptina (?) sordescens, Rosen., A.M.N.H., 1885, p. 424.
Mormoscopa crossodora, Meyr., Tr. E.S., 1897, p. 371.
Queensland, Brisbane. N.S. Wales, Mount Kosciusko. Victoria, Gisborne.

Panilla melanosticta, *n. sp.*

(*Melanostiktos*, black-spotted.)

Female, 21 mm. Head, palpi, thorax, and abdomen dark fuscous, mixed with whitish. Legs whitish, anterior pair fuscous anteriorly. Forewings triangular, costa straight, apex round-pointed, termen crenulate, bowed, somewhat oblique; fuscous-whitish, with scattered dark-fuscous scales and markings; a

suffused basal fascia, followed by a fine dentate transverse line from one-fifth costa to one-third dorsum; an ill-defined median fascia; a finely dentate outwardly curved line from three-fifths costa to two thirds dorsum, succeeded by a whitish line, which again is followed by dark-fuscous blotches on costa and mid-disc; four whitish dots on terminal part of costa; a row of subterminal dots, followed by dark suffusions on apex, mid-termen, and tornus; a fine terminal line; cilia whitish, mixed with fuscous. Hindwings with termen crenulate, rounded; colour and irroration as forewings; a broad suffused dark-fuscous median band; subterminal dots, terminal line, and cilia as forewings.

Type in coll. Turner.

Queensland, Bundaberg, Brisbane; two specimens.

Zethes blechrodes, *n. sp.*

(*Blechrodes*, weak-looking.)

Male, 25 mm. Head and thorax greyish-brown. Palpi very long (5), second joint much elongated (3), terminal joint moderate (1), acute; greyish-brown Antennæ ochreous-whitish; in male with short pectinations (1), which give rise to tufts of cilia, terminal third simple, ciliated. Abdomen greyish-brown. Legs greyish-brown. Forewings triangular, costa convex at base, moderately excised in middle, apex acute, termen prominently angled on vein 4, above angle slightly excised, beneath crenulate; greyish-brown; a pale brownish-ochreous postmedian line, irrorated with brown scales, and preceded by a whitish discal lunule rather below middle; traces of a fuscous subterminal line; an interrupted dark-fuscous terminal line; cilia pale-brownish-ochreous, mixed with fuscous. Hindwings with termen crenulate, sharply angled on vein 4; greyish-brown; a large whitish tornal blotch partly obscured by ground-colour; terminal line and cilia as forewings.

Sir Geo. Hampson remarks that this species is almost exactly like *Zethes pectinifer*, Hmps., from India, but the male antennæ are quite different.

Type in coll. Agricultural Department, Queensland.

North Queensland, Cairns; one specimen.

Gen. Placerobela, nov.

(*Plakerobelos*, with broad weapons—palpi.)

Head with projecting frontal tuft. Tongue well developed. Palpi obliquely ascending; second joint moderate, not reaching vertex; terminal joint much thickened with scales anteriorly, longer than and as broad as second joint, apex obtusely pointed. (Antennæ in male unknown.) Thorax with a small posterior crest. Abdomen smooth. Forewings with vein 2 from two

thirds, 3 and 4 from angle, 7, 8, 9 stalked, 10 from areole. Hindwings with 3 and 4 connate, 5 arising from midway between 4 and middle of cell, 6 and 7 connate.

The peculiar palpi appear to sufficiently characterise this genus.

Placerobela brachyphylla, *n. sp.*

(*Brachuphullos*, short-winged.)

Female, 32 mm. Head, palpi, antennæ, and thorax fuscous. Palpi long(3), second joint as long as breadth of eye, terminal joint long (one and half). Legs fuscous. Forewings triangular, costa nearly straight, apex rectangular, termen rather strongly bowed, slightly oblique; pale-fuscous, finely strigulated with darker fuscous; obscure discal dots at one-fourth, and mid-disc towards costa; a straight line from mid-costa to three-fifths dorsum forms the sharp anterior edge of a paler area which posteriorly is suffused; a series of obscure whitish terminal dots on veins; cilia fuscous. Hindwings with termen strongly bowed; fuscous; cilia fuscous.

Type in coll. Turner.

North Queensland, Townsville, in April; one specimen received from Mr. F. P. Dodd.

Hypena gypsospila, *n. sp.*

(*Gupsos*, chalk, and *spilos*, a spot—in allusion to the spot on hindwing.)

Female, 32 mm. Head fuscous, frontal tuft with a few whitish scales. Antennæ fuscous, inferior surface towards base ochreous-whitish (anterior portions broken off). Thorax pale-ochreous-brown. (Abdomen broken.) Legs fuscous. Forewings triangular, costa very slightly arched, apex pointed, termen rather strongly bowed, slightly oblique; pale-ochreous-brown, with a few sparsely scattered blackish scales; a blackish dot beneath costa at one-fourth; a straight brown line from costa at three-fifths to mid-dorsum, edged posteriorly by a fine white line—a small greyish suffusion follows this line on dorsum; a waved subterminal line of minute blackish dots, a brown line close to termen leaving terminal edge paler; cilia fuscous, with a pale median line. Hindwings with termen strongly rounded; dark-fuscous; a large ochreous-whitish blotch at apex; between blotch and tornus there is an ochreous-whitish terminal line, bisected by a conspicuous dark-fuscous line; cilia fuscous, on apical blotch ochreous-whitish.

Type in Queensland Museum.

North Queensland, Cairns, in November; one specimen, taken by Mr. C. J. Wild.

Marapana rhodea, *n. sp.*

(*Rhodeos*, rosy.)

Male, 32 mm. Head and thorax ochreous-whitish, faintly pinkish-tinged, with a few scattered black scales. Palpi rather long (3), porrect, ochreous-whitish, with a few black scales. Antennæ ochreous-whitish; in male simple, with a short bristle (1) on each segment. Abdomen pinkish, with a few blackish scales. Legs ochreous-whitish; bases of outer spurs and a few scattered scales blackish. Forewings elongate-oblong, costa scarcely arched, apex acute, termen sinuate, scarcely oblique; ochreous-whitish, faintly pinkish-tinged, with sparsely scattered blackish scales; a minute blackish dot in mid-disc; a suffused line of dark irroration from apex towards mid-dorsum, followed by a series of minute blackish dots; a series of minute blackish dots between veins close to termen; cilia ochreous-whitish. Hindwings truncate at tornus, termen gently rounded above tornus; ochreous-whitish, suffused with pink; a series of dark-fuscous dots close to termen; a fine interrupted dark-fuscous terminal line; cilia ochreous-whitish.

Type in coll. Turner.

North Queensland, Cairns; one specimen, received from Mr. H. Tryon.

Tipasa demonias.

Trigonistis demonias, Meyr., Tr. E.S., 1902, p. 39.
Tipasa macrobela, Turn., P.L.S., N.S.W., 1902, p. 126.
Queensland, Brisbane.

Tipasa asthenopa.

Trigonistis asthenopa, Meyr., Tr. E S., 1902, p. 40.
Prolophota camptoloma, Turn., P.L.S., N.S.W., 1902, p. 127.

I think these are the same. The species is probably variable, but recognisable by the strongly sinuate termen of forewing.

Queensland, Brisbane. N.S. Wales, Gosford.

Section Hyblaeinæ.

Hyblaea ibidias.

Hyblaea ibidias, Turn., P.L.S., N.S.W., 1902, p. 155

Recent captures have shown that this species is variable. The forewings may be grey, and both fore and hind wings may be marked with numerous fuscous dots and blotches.

Queensland, Brisbane.

Lymantriadæ.

Gen. Haplopseustis.

Meyr., Tr. E.S., 1902, p. 34.

Acnissa, Turn., Tr. R.S., S.A., 1902, p. 180, is a synonym of

this. I may have been mistaken in referring the genus to this family. Certainly the connection of vein 8 with the cell is nearer the base than in *Euproctis*, and the apparent resemblance in other characters to that genus may be deceptive.

Haplopseustis erythrias.

Haplopseustis erythrias, Meyr., Tr. E.S., 1902, p. 34.
Acnissa pyrrhias, Turn., Tr. R.S., S.A., 1902, p. 180.
North Australia, Port Darwin. North Queensland, Townsville. Queensland, Brisbane.

Euproctis edwardsi.

Teara edwardsi, Newm., Tr. E.S, IV., p. 54 (1856), p. 284, Pl., xviii., f. 10.
Teara togata, Luc., P.L.S., N.S.W., 1891, p. 285.
Queensland, Brisbane. Victoria, Melbourne. South Australia, Adelaide.

Caragola clara.

Redoa clara, Wlk, Brit. Mus. Cat., XXXII., p. 343.
Caviria clara, Hmps., Moths Ind., I., p. 490.
Porthesia collucens, Luc., P.L S., N.S.W., 1889, p. 1090.
Queensland, Brisbane.

Redoa transiens.

Redoa transiens, Wlk., J. Linn. Soc., VI., p. 128.
North Queensland, Armidale, near Townsville, in December; one specimen, received from Mr. F. P. Dodd.

Laelia obsoleta.

Bombyx obsoleta, Fab., Ent. Syst., III., I., p. 463.
Laelia eremaea, Meyr, Tr. R S, S.A., 1891, p. 193.
Queensland, Duaringa, Brisbane.

Orgyia australis.

Female, *Orgyia australis*, Wlk., Brit. Mus. Cat., IV., p. 787.
Lacida postica, Wlk., Brit. Mus. Cat., IV., p. 803.
Orgyia canifascia, Wlk., Brit. Mus. Cat., XXXII., p. 325.
Queensland, Brisbane.

Colussa denticulata.

Teara denticulata, Newm, Tr. E.S., 1856, p. 283.
Darala basigera, Wlk., Brit. Mus. Cat., XXXII., p. 372.
Darala undulata, Feld., Reise Nov., Pl. 98, f. 11.

Colussa connexa.

Darala connexa, Wlk., Brit. Mus. Cat., IV., p. 898.
Darala fervens, Wlk., Brit. Mus. Cat., IV., p. 898.
Darala postica, Wlk., Brit. Mus. Cat., IV., p. 899.
Darala zonata, Feld., Reise Nov., Pl. 99, f. 1.

Heracula leonina, *n. sp.*

(*Leoninus*, like a lion, tawny.)

Male, 58 mm. Head, palpi, and antennæ pale-ochreous. Thorax deep-ochreous, mixed with whitish. Abdomen deep-ochreous, mixed with whitish; base of tuft whitish. Legs whitish-ochreous; tarsi and anterior tibiæ dark-fuscous. Fore-wings elongate-oval, costa slightly arched, more so towards apex, apex rounded, termen very obliquely rounded; ochreous-brown; costal and dorsal edge ochreous; a longitudinal oval whitish spot in mid-disc near base; another rather smaller oval whitish spot at end of cell; veins towards termen outlined in whitish-ochreous; cilia ochreous, mixed with brownish. Hindwings with termen rounded, bright-ochreous; cilia ochreous.

Type in Queensland Museum.

North Queensland (?); one specimen, without locality.

Olene horsfieldi.

Saund., Tr. E.S., 1851, p. 162. Hamps., Moths Ind., I., p. 448 (to which refer for synonymy).

North Queensland, Townsville, in June; one male specimen, bred by Mr. F. P. Dodd. There is a female in the Queensland Museum.

Queensland, Brisbane, in May.

Olene mendosa.

Olene mendosa, Hb., Zutr. Exot. Schm., III., p. 19, Pl. 147, f. 293-4. Feld., Reise Nov., Pl. 99, f. 6.
Antipha basalis, Wlk., Brit. Mus. Cat., IV., p. 806.
Nioda fusiformis, Wlk., Brit. Mus. Cat., V., p. 1,070.
Rilia lanceolata, Wlk., Brit. Mus. Cat., V., p. 1,075.
Dasychira sawanta, Moore, Lep. E.I. Co., p. 340.
Dasychira basalis, Wlk., Brit. Mus. Cat., XXXII., p. 362.
Dasychira divisa, Wlk., Brit. Mus. Cat., XXXII., p. 363.
Dasychira basigera, Wlk., Brit. Mus. Cat., XXXII., p. 363.
Rilia distinguenda, Wlk., Brit. Mus. Cat., XXXII., p. 435.
Rilia basivitta, Wlk., Brit. Mus. Cat., XXXII., p. 436.
Turriga invasa, Wlk., Char. Undescr. Lep. Het., p. 15.
Comment is needless!

North Queensland, Cooktown, Townsville. Queensland, Duaringa, Brisbane.

Psalis securis.

Psalis securis, Hb., Zutr. Exot. Schm., III., p. 9, Pl. 146, f. 291-2.
Arestha antica, Wlk., Brit. Mus. Cat., IV., p. 805.
Rigema falcata, Wlk., Brit. Mus. Cat., XXXII., p. 437.
Rigema tacta, Wlk., Brit. Mus. Cat., XXXII., p. 438.
Anticyra approximata, Wlk., Brit. Mus. Cat., XXXII., p. 440.
Queensland, Brisbane.

Fam. URANIADÆ.

Sub-fam. Uranianæ.

Acropteris justaria.

Micronia justaria, Wlk., Brit. Mus. Cat., XXIII., p. 821.
North Australia, Port Darwin. North Queensland, Thursday Island, Cairns, Johnstone River.

Acropteris striataria, Clerck.

Teste, Hmps., Moths Ind., III., p. 115.
Micronia teriadata, Gn., Lep., X., p. 29.
Anteia canescens, Luc., P.L.S., N.S.W., 1891, p. 300.
North Queensland, Cape York, Townsville. Queensland, Rockhampton.

Acropteris nanula.

Micronia nanula, Warr., Nov. Zool., 1898, p. 226.
Queensland, Westwood, Killarney; a series in October.

Pseudomicronia discata.

Micronia discata, Warr., Nov. Zool., 1899, p. 319.
Anteia doddsiana, Luc., P.R.S., Q, 1899, p. 149.
Priority of publication rests, I believe, with Mr. Warren's name.
Queensland, Brisbane, Toowoomba.

Sub-fam. Epipleminæ

A difficult group; the species are nearly all small, inconspicuous, and rather variable, and the published descriptions very difficult to identify. The generic revision of the sub-family will be no easy task, and it may be noted in passing that vein 11 of forewings may be either free or strongly anastomosing with 12 within the limits of the same species.

Epiplema coeruleotincta, Warr.

North Queensland, Townsville, in April; two specimens, received from Mr. F. P. Dodd.

Epiplema argillodes, *n. sp*

(*Argillodes*, like clay.)

Male and female, 21-28 mm. Head white; face and palpi dark-brown. Antennæ whitish. Thorax grey-whitish; in female brownish-tinged. Abdomen grey-whitish, with a few fuscous scales on penultimate segment; in female brownish-tinged. Legs ochreous-whitish, anterior tibiæ and tarsi pale-grey. Forewings triangular, costa moderately arched, apex forming an obtuse rectangular projection, termen sigmoid beneath projection; grey-whitish, more or less irrorated with dark-fuscous; in female brownish-tinged; markings dark-fuscous; an obscure series of minute dots on costa; sometimes a dot in disc beneath one-third costa, opposite another above two-fifths dorsum, representing antemedian line; a dot beneath two-thirds costa, sometimes followed by a second dot, opposite a larger spot on two-thirds dorsum, representing postmedian line; a well-marked terminal dot just beneath apex, followed by a conspicuous dark line on concave part of termen, sometimes interrupted; cilia whitish, mixed with dark-fuscous. Hindwings with termen angled and slightly projecting on vein 7, slightly excavated beneath projection, rather strongly bowed on vein 4, and slightly projecting at tornus; colour and irroration as forewings; traces of antemedian line near inner margin at one-third; a strongly marked postmedian line from inner-margin at two-thirds not reaching costa, obsolete in female; cilia whitish. Under surface brown-whitish, with a few fuscous scales.

Type in coll. Turner.

Queensland, Gympie, Brisbane; three specimens, received from Mr. F. P. Dodd and Mr. R. Illidge.

Epiplema conflictaria.

Erosia conflictaria, Wlk., Brit. Mus. Cat., XXIII., p. 851. Hmps., Moths Ind., III., p. 129.

North Queensland, Geraldton, Townsville; two specimens, in November and December.

Epiplema oxytypa, *n. sp.*

(*Oxutupos*, with a sharp or pointed mark—in allusion to antemedian line of forewings.)

Female, 20 mm. Head white, face and palpi fuscous. Antennæ whitish. Thorax white, sometimes with a few dark-fuscous scales. Abdomen grey-whitish, sometimes with a few dark-fuscous scales. Legs white, anterior pair dark-fuscous anteriorly Forewings triangular, costa gently arched, apex rounded, termen gently rounded, very slightly indented between veins 4 and 5, slightly oblique; pale-whitish-ochreous; base of costa, mid and

terminal portions of disc more or less suffused with grey; sparsely scattered dark-fuscous scales tending to form minute transverse strigulæ, most numerous on costa; lines ferrugineous-fuscous; antemedian line from costa at one-fourth, very obliquely outwards, acutely angled in mid-disc to end in dorsum at two-fifths; postmedian line from costa beyond middle, strongly outwardly curved and slightly waved, then sigmoid to dorsum at three-fourths; a subterminal series of minute black dots not reaching tornus; cilia whitish, with a ferrugineous central line and dark-fuscous dots opposite veins. Hindwings with termen, forming two acute projections on veins 4 and 7; colour and irroration as forewings; antemedian line fine, transverse, with a slight median angle; postmedian line evenly curved, slightly waved in middle, followed by a whitish line; a spot of fine blackish irroration near mid-termen; a fine whitish terminal line, preceded by a greyish line, and this again by three fine black dots between projections; cilia ferrugineous-fuscous, apices whitish, towards tornus whitish, with a median ferruginous line. Under surface white, with dark-fuscous strigulæ; costal and terminal areas of forewings suffused with grey.

Type in coll. Turner.

Queensland, Brisbane, in May; two specimens, received from Mr. R. Illidge.

Epiplema inclarata.

Erosia inclarata, Wlk., Brit. Mus. Cat., XXXV., p. 1,646.

Thursday Island, in March.

North Queensland, Townsville, in May; received from Mr. F. P. Dodd.

Epiplema xylinopis, *n. sp.*

(*Xulinopis*, looking like wood.)

Female, 22 mm. Head whitish-grey; face and palpi dark-brown. Antennæ ochreous-whitish. Thorax and abdomen pale-brownish, tinged with purplish-grey. Legs ochreous-whitish, anterior pair grey. Forewings triangular, costa gently arched, strongly arched just before apex, apex tolerably acute, termen sinuate beneath apex, bowed on vein 3; pale-brownish, suffused, except in mid-disc, with purple-grey; with numerous obscure darker transverse strigulæ; lines obscure, ochreous; antemedian at one-third, obsolete towards margins; postmedian from beneath two-thirds costa to three-fourths dorsum, dentate, not outwardly bowed; a narrow terminal dark-fuscous suffusion from apex to mid-termen; cilia bases pale-brownish, apices dark-fuscous. Hindwings with termen straight to between veins 1 and 2, where it forms an acute angle and is notched between this and tornus;

colour, strigulation, and cilia as forewings. Under surface grey with sparsely scattered dark-fuscous strigulæ.

Peculiar in the shape of the hindwings, and referred to this genus only provisionally.

Type in coll. Turner.

North Queensland, Townsville, in April; one specimen, received from Mr. F. P. Dodd.

Monobolodes subfalcata.

Monobolodes subfalcata, Warr., Nov. Zool, 1898, p. 230.

North Queensland, Townsville, in March and April; six specimens, received from Mr. F. P. Dodd. Queensland, Duaringa.

Dirades platyphylla, *n. sp.*

(*Platuphullos*, with broad wings.)

Male and female, 25-26 mm. Head white; face and palpi dark-fuscous. Antennæ white. Thorax and abdomen whitish or pale-grey. Legs whitish, anterior pair fuscous. Forewings triangular, costa slightly arched, apex rounded, termen obliquely rounded; whitish or pale-grey; a darker suffused line along basal half of costa; a few scattered black scales; antemedian line obsolete; a small or minute blackish discal dot; postmedian line slender, faintly marked, ferrugineous, externally margined with whitish, in female fuscous, from three-fourths costa first strongly outwardly, and then strongly inwardly curved to three-fourths dorsum, dorsal end blackish in male, in female preceded on dorsum by a broad fuscous suffusion; a subterminal row of black dots from apex to mid-termen; cilia grey. Hindwings with termen in male angled and slightly projecting on vein 7, thence nearly straight to vein 4, inner portion of wing folded over and containing a glandular thickening; termen in female with small acute projections on veins 4 and 7; colour irroration and cilia as forewings; postmedian line in male very slender, evenly rounded, crenulate; in female rather strongly bowed and angled between veins 3 and 4, and better marked; a dark-fuscous discal streak precedes it in female; in male three black subterminal dots.

Type in coll. Turner.

North Queensland, Thursday Island. Queensland, Brisbane, in February and March; seven specimens.

Dirades mutans.

Erosia mutans, Butl., Ann. Mag. N.H., 1887, p. 434.

Dirades leucocera, Hmps., Ill. Het., VIII., p. 102, Pl. 150, f. 13; Moths Ind., III., p. 133.

North Queensland, Thursday Island, Townsville, in March; four specimens, received from Mr. F. P. Dodd.

Dirades leucocephala.

Erosia leucocephala, Wlk., Brit. Mus. Cat., XXVI., p. 1,758.
Epiplema lugens, Warr., Nov. Zool., 1897, p. 202.
North Queensland, Geraldton, Townsville, in March. Queensland, Rockhampton, Brisbane, in August.

Dirades decorata.

Dirades decorata, Warr., Nov. Zool., 1898, p. 228.
North Queensland, Townsville, in February and April Queensland, Duaringa, Brisbane, and Mount Tambourine, in November, December, March, and April.

Dirades stereogramma, *n. sp.*

(*Stereogrammos*, stiffly marked—in allusion to postmedian line of forewing.)

Female, 16 mm. Head white; face and palpi fuscous. Antennæ whitish. Thorax and abdomen white, irrorated with brownish. Legs whitish, irrorated with fuscous; anterior pair mostly fuscous. Forewings triangular, costa nearly straight, slightly arched towards apex, termen straight above, slightly rounded towards tornus, dorsum somewhat incurved; grey-whitish, irrorated with brownish; a few dark-fuscous scales on costa, and near base beneath costa; a brownish median band, anterior margin from one-third costa to two-fifths dorsum, strongly angulated outwards; posterior edge from beyond mid-costa to three fourths dorsum, nearly straight, slightly inwardly curved in mid-disc, edged posteriorly with whitish; three or four subterminal dark-fuscous spots above mid-termen; cilia whitish, mixed with brownish and dark-fuscous. Hindwings with termen rounded, with short acute projections on veins 4 and 7; grey-whitish, with sparse brownish and dark-fuscous irroration; posterior line whitish, partly edged anteriorly with brownish, rather strongly outwardly bowed; a dark subterminal line, preceded by a whitish line, and interrupted by two white streaks on either side of inner projection; cilia as forewings.

Type in coll. Turner.

North Queensland, Townsville, in March; one specimen, received from Mr. F. P. Dodd.

Paradirades assimilis.

Paradirades assimilis, Warr., Nov. Zool., 1896, p. 353.
My example has a broad obscurely darker band across middle of both wings.

North Queensland, Cooktown, Townsville, in May; one specimen, received from Mr. F. P. Dodd.

Lobogethes interrupta.

Lobogethes interrupta, Warr., Nov. Zool., 1896, p. 352.
Gathynia despecta, Warr., Nov. Zool., 1898, p. 229.
Erosia radiata, Luc., P.R.S., Q., 1898, p. 17.

North Queensland, Townsville; Queensland, Duaringa, Brisbane, Dalby, Warwick.

Eupterotidæ.

Epicoma argentata.

Teara argentata, Wlk., Brit. Mus. Cat., XXXII., p. 355.
Marane subargentea, Wlk., Brit Mus. Cat., XXXII., p. 397.
Teara argentosa, Luc., P.L.S., N.S.W., 1889, p 1089.

North Australia. North Queensland, Townsville. Queensand, Duaringa.

Epicoma asbolina.

Epicoma asbolina, Turn., Tr. R.S., S.A., 1902, p. 183.

I have since received the male from Mr. F. P. Dodd. The sexes are similar, and in this it differs from the allied *E. barnardi*, Luc.

North Australia, Port Darwin. North Queensland, Townsville, Bowen.

Gen. Hypercydas, nov.

(*Huperkudas*, glorious.)

Head, palpi, thorax, legs, and abdomen densely hairy. (Antennæ in male unknown.) Forewings with vein 2 from middle of cell, 3 from before angle, 4 from angle, discocellular oblique, 5 from upper angle, 6, 7, 8, 9, 10 stalked, 11 connected by a bar with 9 + 10 beyond 8. Hindwings with veins 3 and 4 separate at base, discocellular oblique, 5, 6, 7 stalked, 8 widely diverging from cell near base.

Allied to *Melanothrix*, Feld. (Hampson, Moths Ind., I., 44), differing in the bar between veins 11 and 9 + 10 of forewing, and stalking of vein 5 of hindwing.

Hypercydas calliloma *n. sp.*

(*Kallilomos*, beautifully margined.)

Female, 70 mm. Head, palpi, thorax, and abdomen clear brownish-ochreous. Antennæ dark-fuscous, near base ochreous-whitish. Legs densely hairy, dark fuscous; femora brownish-ochreous. Forewings triangular, costa nearly straight to two-thirds, thence moderately arched, apex rounded; termen slightly rounded, moderately oblique; clear brownish-ochreous; a whitish discal spot above middle at one-third; a conspicuous whitish subterminal line, sharply dentate between veins; cilia brownish-ochreous. Hindwings with termen rounded; colour and markings as forewings, but without discal spot.

Type in Queensland Museum.

North Queensland (?). One specimen without locality. Sir Geo. Hampson informs me that there is a much browner specimen in the British Museum from New Guinea.

Lasiocampidæ.

Entometa rufescens.

Gastropacha rufescens, Wlk., Brit. Mus. Cat., VI., p. 1395.
Megasoma rubida, Wlk., Brit. Mus. Cat., XXXII., p. 566.
Bombyx crenulata, Luc., P.L.S., N.S.W., 1893, p. 137.
Queensland, Brisbane. Victoria, Melbourne. Tasmania, Hobart.

Clathe anthracica.

Clathe anthracica, Turn., Tr. R.S., S.A., 1902, p. 186.
Type in coll. Lyell.
Victoria, Gembrook.
These particulars were accidentally omitted when describing this species.

Clathe albicans.

Sitina albicans, Swin., Cat. Ox. Mus., I., p. 268, Pl. 6, f. 10 (1892).
Bombyx pinnalis, Luc., Tr. Nat. Hist. Soc., Q., 1895, p. 103.
These are, I think, identical.
Queensland, Brisbane, in April; one specimen. Swinhoe's type is said to be from Western Australia.

Limacodidæ.

Natada ordinata.

Doratifera ordinata, Butl., Tr. E.S., 1886, p. 388.
Doratiphora colligans, Luc., P.R.S., Q., 1901, p. 76.
North Queensland, Townsville. Queensland, Peak Downs, Brisbane.

Apodecta monodisca.

Apodecta monodisca, Turn , Tr. R.S., S.A., 1902, p. 189.
Anisobathra actinias, Low., Tr. R.S., S.A., 1902, p. 221.
North Queensland, Thursday Island, Townsville, Mackay. Queensland, Stradbroke Island.

Fam. ZEUZERIDÆ.

Xyleutes coscinota, *n. sp.*

(*Koskinotos*, sieve-like.)

Male, 68 mm. Head and thorax grey, finely irrorated with whitish; thorax with a dark-grey horseshoe-shaped mark posteriorly, its apex being at mid-thorax. Palpi dark-grey, inferior surface white. Antennæ whitish-grey; pectinations ochreous-fuscous. Abdomen grey, irrorated with whitish; bases of segments whitish. Legs grey, irrorated with whitish. Forewings

elongate, costa scarcely arched, apex rounded, termen gently rounded, strongly oblique; white, crossed by very numerous fine grey strigulæ, which are irregularly connected by cross-bars, forming a fine sieve-like pattern; about a dozen grey dots on costa; an irregular grey discal spot rather beyond middle; a somewhat triangular grey blotch on fold beneath mid-disc; a terminal series of dark-grey dots extending into cilia; cilia white, bases partly grey, on dots wholly grey. Hindwings elongate, termen sinuate; white; along termen is a narrow area of sieve-like grey markings; terminal dots and cilia as forewings.

Type in coll. Turner.

North Queensland, Townsville, in October; one bred specimen, received from Mr. F. P. Dodd.

XYLEUTES ACONTUCHA, *n sp.*

(*Akontouchos*, bearing a dart—in allusion to mark on fold of forewing.)

Male and female, 58-64 mm. Head grey. Palpi white, external surface blackish. Antennæ whitish-grey; pectinations dark-fuscous. Thorax grey, with two diverging blackish lines from centre of collar to posterior angles Abdomen grey. Legs grey; tarsi dark-fuscous, annulated with whitish. Forewings elongate, costa gently arched, apex rounded, termen gently rounded, strongly oblique; pale grey, markings blackish; a dark-fuscous suffusion beneath basal third of costa; half a dozen dots on costa; a broad line on fold from one-eighth to middle, its posterior extremity slightly enlarged, ending in an acute point; a terminal series of dots extending into cilia; cilia whitish, except on dots, with a few grey scales. Hindwings elongate, termen nearly straight; whitish-grey; a few grey scales towards termen; cilia whitish, opposite veins barred with dark-fuscous.

The female is similar to the male, but darker, with markings less distinct.

Type in coll. Turner.

North Queensland, Townsville, in October and November; two bred specimens, received from Mr. F. P. Dodd.

Fam. NOCTUIDÆ.

Sect. HOMOPTERINÆ.

Gen. ACANTHOCOLES, *nov.*

(*Akantha*, a thorn, prickle; *colon*, a limb—with prickly limbs.)

Head smooth. Tongue strongly developed. Palpi ascending, recurved; second joint with loosely spreading scales beneath; third joint long, stout, obtuse, nearly reaching vertex, with appressed scales. Antennæ in male (unknown). Thorax (rubbed). Abdomen smooth. Fore-, mid-, and hind-tibiæ with smooth appressed scales and numerous small spines; mid-tibiæ with one, hind-tibiæ with two pairs of spurs, the inner spurs longer. Fore-

wings with vein 2 from two-thirds, 3 from near angle, 6 from upper angle, 7, 8, 9 stalked, 10 connected by a bar with 8 + 9 opposite 7. Hindwings with 3 and 4 connate, 5 approximate to 4 at base, 6 and 7 connate.

ACANTHOCOLES EUCESTA, *n. sp.*

(*Eukestos*, beautifully embroidered.)

Female, 46 mm. Head dark-fuscous mixed with reddish; lower half of face whitish-ochreous. Palpi whitish-ochreous. Antennæ dark-fuscous, towards extremities ochreous-tinged. Thorax whitish-ochreous, reddish-tinged; collar divided by a narrow reddish-line, before this it is whitish-ochreous, behind dark-fuscous. Abdomen whitish-ochreous, dorsum irrorated with pale-red. Legs whitish-ochreous; femora and tibiæ suffused with red on upper surface. Forewings triangular, costa nearly straight, apex rounded, termen slightly rounded, moderately oblique; whitish-ochreous suffused with pale-reddish; lines dark-fuscous; a basal line from near base of costa not reaching dorsum; a thick antemedian line from one-fourth costa to dorsum before middle; a large discal ocellus, outlined with dark-fuscous, inside this with ochreous-brown, then with whitish-ochreous, centre ochreous-brown with a black blotch in upper half, and some pearly-white scales on veins; postmedian line from two-thirds costa very obliquely outwards, then curved inwards and dentate to dorsum at five sixths; this is followed by a thicker dentate line, irrorated with bluish-white scales, from seven-eighths costa to tornus; two parallel fine crenate lines near termen; cilia whitish-ochreous, apices fuscous. Hindwings with termen rounded; colour as forewings, but red tinge deeper; basal lines and ocellus absent; postmedian lines wavy rather than dentate, the second line considerably thickened; terminal lines and cilia as forewings.

Type in coll. Turner.

N.S. Wales, Cobar; one specimen, received from Mr. W. W. Froggatt.

Descriptions of New Australian Noctuina, &c.

By Oswald B. Lower, F.E.S. (Lond.), &c.

[Read May 5, 1903.]

BOMBYCINA.

LITHOSIINÆ.

Eligma orthoxantha, n. sp.

Male, 54 mm. Head, palpi, and antennæ dull drab color, head with two black dots between antennæ, palpi with black spots at apices of first and second joints, thorax, with three pairs of black dots, median and lateral, a black dot on patagia. Abdomen orange, with a double dorsal series of black dots throughout. Legs orange, tarsi fuscous. Forewings elongate, moderately dilated posteriorly, costa gently arched, termen obliquely rounded; pale drab, with black markings; a curved series of three dots at base; a double dot on costa at one-eighth, a second obliquely beyond and below, a third just below second; a series of eight spots, first beneath costa at one-third; second, third, fourth, and fifth in a longitudinal row beyond and reaching to beyond two-thirds; sixth, seventh, and eighth in an oblique row immediately below fifth, the whole eight forming a more or less connected series, interspaces filled with whitish; a spot resting on lower edge of cell about middle, an elongate spot on innermargin in middle, and a dentate line between, nearer to first than second spot; a row of dots before termen, anteriorly edged with whitish; a white blotch on costa at one-fourth, more or less continued interruptedly to three-fourths across wing; a moderately broad transverse oblique white fascia, from costa at five-sixths to inner margin at three-fourths, becoming divided into two parallel scalloped lines on lower two-thirds; an irregular white suffusion just beyond middle of wing; cilia drab, with white bars. Hindwings black; apex faintly prominent; cilia whitish Wings beneath blackish. A very distinct insect, somewhat resembling some of the *Xyloryctidæ* in general appearance.

Mackay, Queensland; one specimen in October.

LIPARIDÆ.

Euproctis pycnadelpha, n. sp.

Male, 20 mm. Head, palpi, antennæ, legs, thorax, and abdomen smoky-fuscous, thorax with a suffused ochreous collar. Forewings elongate, triangular, costa slightly arched, termen obliquely rounded; dark smoky-fuscous; costal edge paler; cilia smoky-fuscous, tips paler. Hindwings with termen rounded; smoky-fuscous, paler on basal two-thirds; cilia pale smoky-fuscous.

Henley Beach, South Australia; one specimen in March.

This is very close to *euryzona*, Lower, but the totally different coloring precludes it from being associated with that insect. I have taken but one specimen. I have now a good series of *euryzona*, and they are very constant. I have never met with the female, although often collecting in the same locality.

NOTODONTIDÆ.

Stauropus (?) euryscia, n. sp.

Female, 28 mm. Head, palpi, thorax, and legs blackish. Antennæ and abdomen ochreous, abdomen beneath fuscous. Forewings elongate, moderate, dilated posteriorly, costa strongly arched, termen faintly waved, strongly oblique, rounded; blackish, with black markings; a fine waved line, outwards curved above and below middle; a round spot at one-third above middle, centred with obscure white; a fine line from costa above spot, thence strongly angulated outwards, and becoming strongly sinuate inwards to near below spot, ending on innermargin beyond middle; a strongly waved line from costa at two-thirds to innermargin at two-thirds, curved outwards above middle, sinuate inwards below; veins towards termen outlined with black; a fine black line along termen; cilia fuscous. Hindwings with termen unevenly waved; white; an elongate fuscous discal dot; an obscure fuscous streak from costa about middle to innermargin in middle; a waved fuscous line from three-fourths of costa to three-fourths of inner margin, somewhat sinuate in middle; a fine fuscous line along termen; cilia white.

A curious form; somewhat resembling both species of *Proconis* and *Prorocopis* (*Noctuina*), and also *Œnone xenopis*, Lower (*Monocteniadæ*).

Broken Hill, New South Wales; one specimen in June.

DREPANULIDÆ.

Oreta miltodes, n. sp.

Female, 34 mm. Head, palpi, thorax, antennæ, legs, and abdomen pale fleshy-ochreous, head more carmine tinged. Forewings elongate, triangular, costa strongly arched, termen strongly bowed, excised beneath apex, apex produced; pale ochreous-fuscous, strongly suffused with carmine-pink, especially on terminal area, where it becomes wholly carmine-pink; a fuscous ante-median shade, moderately broad; followed by a similar shade in middle; a nearly straight rather narrower shade from costa at three-fourths to innermargin at about three-fourths; cilia carmine-pink. Hindwings with termen rounded; color and cilia as in forewings; subterminal streak as in forewings; costa broadly grey-whitish.

Mackay, Queensland; one specimen in January.

GEOMETRINA.

BOARMIADÆ.

Boarmia xylotrema, n. sp.

Female, 38 mm. Head, palpi, antennæ, thorax, legs, and abdomen light mahogany-red. Forewings elongate triangular, costa slightly arched, termen rounded, oblique; mahogany-red; a black discal spot; a fine white line, nearly straight, from costa at three-fourths to innermargin just beyond middle, edged throughout by a broad shade of darker ground color; a waved white subterminal line considerably beyond, edged anteriorly by its own width of deeper ground color; cilia mahogany-red. Hindwings with termen waved, rounded; color, discal, lines, and cilia as in forewings.

Cooktown, Queensland; one specimen in November.

NOCTUINA.

AGARISTIDÆ.

Argyrolepidia unimacula, n. sp.

Female, 40 mm. Head, palpi, thorax, and abdomen light fuscous, palpi beneath greyish. Legs fuscous, banded with white. Forewings elongate, triangular, costa gently arched, termen obliquely rounded; dark brownish, with some scattered bluish-white scales in disc; a moderately broad white oblique transverse fascia, from costa at two-thirds to anal angle, somewhat interrupted at anal angle, broadest on upper half; some faint bluish-white scales along termen, cilia fuscous. Hindwings with termen waved, rounded;

blackish, somewhat bronzy tinged; a large roundish white spot in middle of wing; cilia dark fuscous, chequered with white.

Reminds one of *Cæruleitincta*, Lucas, but is without the anterior spots in both wings.

Mackay, Queensland; one specimen in October.

Cruria (?) placodes, n. sp.

Female, 44 mm. Head, palpi, antennæ, and thorax dark fuscous, head and palpi mixed with orange, thorax with two narrow anterior transverse bands. Abdomen and legs dull yellow, abdomen banded with black. Forewings elongate, triangular, costa gently arched, termen rounded, oblique; blackish; markings pale ochreous-yellowish; a narrow elongate spot in end of cell; a small, somewhat quadrate spot on innermargin at one-third; a large transverse fascia-like spot, from immediately beneath costa at two-thirds to three-fourths across wing, obliquely placed; an irregular spot on anal angle; a quadrate spot at apex; cilia blackish. Hindwings with termen slightly waved; blackish; a large ochreous-yellow rounded basal patch, reaching half-across wing, but not reaching innermargin; basal fifth of wing blackish; a small ochreous spot beneath apex; a large ochreous spot just above anal angle; cilia as in forewings.

Allied to *maculosa*, Roths'. I have refrained from forming a new genus, as probably Rothschild has already done so.

Tasmania, near Hobart; one specimen in March.

Cruria (?) hemiphragma, n. sp.

Male, 40 mm. Head, antennæ, palpi, thorax, and abdomen fuscous; head with some ochreous scales, anal tuft yellow. Legs fuscous, coxæ ochreous, tibiæ and tarsi with some whitish rings. Forewings elongate, triangular, costa gently arched, termen rounded, oblique; fuscous, with whitish markings; a row of four moderate spots just beneath costa, between base and one-third; a similar longitudinal row of spots along vein 1, between base and two-fifths; a small spot in middle of cell; an elongate, somewhat reniform spot in end of cell; a rather broad transverse oblique fascia, from immediately beneath costa at two-thirds to two-thirds across wing, curved around on lower half with a strong excavation on anterior edge; a few scales along termen; cilia fuscous. Hindwings with termen rounded, hardly waved; dark fuscous; a transverse whitish median band, not near reaching either margin; cilia as in forewings.

Allied somewhat to *affinis*, Boisd.

CARADRINIDÆ.

Acronycta psorallina, n. sp.

Male, 36 mm. Head and thorax light mossy-green mixed with white. Palpi whitish, at base blackish, antennæ ochreous, abdomen grey-whitish, crests fuscous. Legs fuscous, tibiæ and tarsi banded with whitish. Forewings elongate, moderate, costa nearly straight, apex obtuse, termen slightly waved, rounded; dull white, mixed with light mossy-green and darker green; costa spotted throughout with greenish-fuscous, spots at one-fourth, middle, and four-fifths larger; from spot in middle proceeds an irregular transverse greenish-fuscous fascia to fold, thence continued to termen above anal angle, interrupted by a sharp white streak before its termination and more or less above fold; a fine black interrupted line running through centre of posterior end of greenish-fuscous streak, and with two teeth on its upper edge; from spot at four-fifths proceeds a fine curved blackish line reaching to nearly half across wing, edged anteriorly by a parallel white streak; a series of greenish lunulate marks along termen; cilia whitish, barred with fuscous at extremities of veins. Hindwings with termen faintly waved; dull whitish; a faint fuscous discal spot; a dull coppery-reddish fascia along termen edged by a darker waved line, both becoming somewhat obsolete at anal angle; cilia as in forewings. Underside of wings very pale greenish-white; forewing strongly suffused with dull coppery-red, except at base and along innermargin.

Reminds one of *Corula lichenopa*, Meyr.

Herberton, Queensland; one specimen.

Caradrina (?) pudica, n. sp.

Male, 20 mm. Head whitish. Thorax silvery-grey, collar broadly whitish. Palpi and antennæ fuscous, ciliations nearly 1. Abdomen greyish ochreous. Legs pearly-white. Forewings elongate, moderate, termen obliquely rounded; silvery grey; veins faintly outlined with fuscous; a fine narrow whitish streak along costa, from base to beyond middle; cilia silvery grey, base darker. Hindwings with termen irregularly waved; iridescent white, infuscated on upper half of termen and apex; cilia white.

Derby, Western Australia; one specimen, in November.

Caradrina (?) lophota, n. sp.

Male, 20 mm. Head, thorax, and palpi dark fuscous, palpi whitish beneath. Antennæ fuscous, ciliations one-half (abdomen broken). Legs whitish. Forewings elongate, moderate,

termen gently rounded, oblique; dark fuscous; dorsal third mixed with bluish-white towards termen, especially on upper third; a slightly raised patch of blackish scales on innermargin near base, followed posteriorly by a double fuscous line, indicating first line which is faintly traceable to costa at one-fourth, angulated in middle; second line traceable, but not forming definite markings; subterminal obscure, blackish, dentate; a row of small black lunules along termen, edged posteriorly with fine white points; cilia blackish. Hindwings with termen rounded; pale-ochreous, infuscated along termen; a fuscous line along termen; cilia ochreous.

The raised crest of scales on forewings is a noticeable character. This and previous species will require new genera, but as so many new genera have been recently described, and I do not yet possess the literature, I think it better to leave the matter in abeyance for the present.

Derby, Western Australia; one specimen, in November.

ACONTIADÆ.

Erastria onthodes.

Female, 30 mm. Head, palpi, antennæ, thorax, and abdomen dark fuscous, crest of abdomen fuscous. Legs blackish ringed with whitish. Forewings elongate, triangular, costa hardly arched, termen faintly waved, rounded; dark fuscous, markings darker fuscous, obscure; first line from one-fourth costa to one-fourth innermargin, strongly waved; median and second, waved, hardly traceable; subterminal waved, moderately defined, rather thick; orbicular hardly traceable; reniform well defined, fuscous, edged with whitish; a row of small white dots along termen; cilia fuscous, with blackish spots at extremities of veins. Hindwings with termen faintly waved, rounded; fuscous, becoming lighter on basal half; a short whitish line, edged above and below by its own width of blackish, just above anal angle; a series of blackish lunulate marks along termen, edged above with obscure whitish marks; cilia light fuscous.

Recalls *Euplexia confundens*, Walk., in general appearance.

Duaringa, Queensland; one specimen.

Tarache lunata, n. sp.

Male, 25 mm. Head, palpi, thorax, and abdomen fuscous, mixed with whitish. Antennæ broken. Legs whitish, tibiæ and tarsi ringed with blackish. Forewings elongate, triangular, costa arched at base, thence nearly straight, termen rather strongly bowed; oblique; fuscous, with silvery-whitish

markings, edged with fuscous; an elongate-lunate mark just below costa in middle; a moderately large quadrate spot on innermargin near base reaching more than half across wing, its posterior extremity continued along fold as an elongate spot to middle; an irregularly waved transverse fascia, from four-fifths costa to innermargin just before anal angle, strongly sinuate outwards on upper two-thirds, and more or less widely furcate on lower one-third; cilia fuscous. Hindwings light fuscous; a whitish spot in middle of wing; costa broadly dull whitish; an interrupted whitish line along termen; cilia fuscous.

An exceptionally distinct species.

Lake Mulligan, Central South Australia; one specimen in November.

TARACHE MICRASTIS, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, and abdomen dark fuscous. Legs greyish. Forewings elongate, moderate, costa gently arched, termen oblique, hardly rounded; dark fuscous; first line double, dull ferruginous, waved on lower half; median shade moderately thick, dark fuscous, broadest on upper half; second line, double fine, black, strongly curved outwards on upper two-thirds; orbicular small, whitish, edged blackish; reniform dull whitish, similarly edged; a roundish blackish spot on costa before apex; a fine black line along termen; cilia fuscous, basal half darker, with a median blackish parting line. Hindwings with termen rounded; fuscous, becoming paler on basal half; cilia fuscous, with a darker subbasal line.

Tennant's Creek, Central South Australia; one specimen in November.

TARACHE NEUROTA, n. sp.

Male, 20 mm. Head, palpi, antennæ, thorax, legs, and abdomen ochreous-white. Forewings elongate, triangular, costa gently arched, termen obliquely rounded, ochreous-white, markings reddish ferruginous; a small mark at base; a waved line from costa at one-third to innermargin at one-third, becoming broadly dilated in middle; a second similar line, curved outwards on upper two-thirds, from costa at two-thirds to innermargin at two-thirds; subterminal line rather thick, more or less interrupted throughout by streaks of ground color; a thick line along termen; cilia ochreous. Hindwings light ochreous; a suffused fuscous discal spot; a transverse fuscous post median line; a parallel subterminal similar line, more suffused; cilia ochreous.

Cooktown, Queensland; one specimen.

Churia thermodes, n. sp.

Male and female, 28-30 mm. Head, antennæ, and thorax light reddish-ochreous, palpi whitish-ochreous. Abdomen light ochreous. Legs reddish-ochreous, dusted with whitish. Forewings elongate, triangular, costa hardly arched, termen obliquely rounded, very faintly sinuate beneath apex; light reddish-ochreous, costa lighter ochreous, shortly strigulated with reddish, more perceptible in female; orbicular and reniform dot like, white, hardly traceable in male; cilia reddish-ochreous. Hindwings with termen unevenly waved; light ochreous, becoming finely irrorated with reddish on posterior half; cilia whitish, with a fuscous subbasal line on upper half of termen.

The coloring of the sexes is somewhat different, the male being much more ochreous than the female, which is strongly suffused with reddish, but intermediate forms occur.

Tennant's Creek, Central South Australia; two specimens in November. I have seen others from the same locality.

Zagira xylonota, n. sp.

Male, 20 mm. Head, palpi, antennæ, and thorax reddish, mixed with white. Abdomen greyish, crests reddish. Legs whitish. Forewings elongate, triangular, costa hardly arched, termen somewhat bowed, especially in middle; dull whitish, suffusedly irrorated with light reddish, so as to appear pale reddish throughout; costal edge reddish; all markings obsolete; posterior sixth of wing darker reddish, especially along termen; cilia reddish-ferruginous. Hindwings with termen irregularly and faintly waved; pale whitish-ochreous, faintly reddish tinged along termen; cilia ochreous, tinged with reddish.

Mackay, Queensland; one specimen in November.

Amyna spilonota, n. sp.

Female, 25 mm. Head, palpi, antennæ, and thorax dull greyish. Abdomen greyish-white. Legs greyish. Forewings elongate, triangular, costa slightly arched, termen hardly rounded, oblique; pale greyish-fuscous, markings obscure; first line fuscous, waved, hardly perceptible; median appearing as a short oblique fuscous shade, just reaching anterior edge of reniform spot; second line fuscous from costa just above reniform, thence curved outwards, strongly waved, and terminating on innermargin at two-thirds; costa between line and apex with five or six ochreous-white spots, separated by fuscous

marks; subterminal thick, light fuscous, sinuate outwards above and below middle; orbicular moderate, whitish, blackish edged; reniform whitish edged anteriorly with blackish, posteriorly with fuscous; a series of blackish lunate marks edged with ochreous-white along termen; cilia whitish, fuscous tinged. Hindwings with termen faintly waved; light fuscous, at base lighter; lunate marks as in forewings; cilia as in forewings.

Tennant's Creek, Central South Australia; one specimen in November.

Dierna achroa, n. sp.

Male, 35 mm. Head, palpi, antennæ, thorax, legs, and abdomen light ochreous-fuscous, palpi fuscous on sides, hairs of posterior legs long, greyish. Forewings elongate, triangular, costa nearly straight, termen angulated in middle, slightly sinuate above and below; dull ochreous, fuscous tinged; an outwardly oblique moderately thick fuscous shade from costa before middle to reniform spot; a similar, more indistinct shade from costa at about three-fourths to lower extremity of preceding shade, thus forming an irregular triangle and enclosing reniform, which is obscurely outlined with ferruginous; a moderately thick subterminal fuscous streak, from costa at five-sixths to innermargin before anal angle, becoming divided by a fine line of ground color on lower half, slightly angulated in middle; a row of irregular fuscous dots along termen; cilia dull ochreous. Hindwings with termen angulated in middle; color and dots along termen as in forewings; subterminal streak fuscous, straight, centred throughout with a fine line of ground color, from five-sixths of costa to innermargin before anal angle; cilia as in forewings.

Mackay, Queensland; one specimen in November.

Callyna leuconota, n. sp.

Male, 40 mm. Head, palpi, antennæ, and thorax dark fuscous, posterior two-thirds of thorax much paler. Abdomen fuscous. Legs dull reddish-fuscous. Forewings elongate, moderate, costa hardly arched, termen unevenly rounded; fuscous, markings dark fuscous; a well defined large cuneiform patch near base; its apex directed towards innermargin, but not near reaching it, outer edge with a sharp short angulation below costa and with a strong concavity below; a fine light fuscous line, from costa at about middle to innermargin before two-thirds, strongly angulated above middle; from angulation proceeds a rather thick straight streak to meet subterminal

spots; subterminal streak formed by a series of moderately large triangular spots not reaching innermargin; ground color between first and subterminal lines dark fuscous on upper half of wing; a roundish ochreous-white patch at apex; a faintly defined row of small ochreous spots along termen; cilia dark fuscous, at apex ochreous-white. Hindwings with termen waved; dark bronzy-fuscous; cilia whitish, with a fuscous subbasal line, becoming wholly fuscous at apex.

In the neighborhood of *costiplaga*, Moore.

Mackay and Brisbane, Queensland; one specimen.

Gadirthra hades, n. sp.

Female, 36 mm. Head, palpi, antennæ, and thorax dark fuscous, palpi beneath ochreous. Abdomen greyish-ochreous. Legs greyish-fuscous, tarsi black, ringed with whitish. Forewings elongate, triangular, costa gently arched, termen waved, rounded; dark smoky-fuscous; all markings obscured by general ground color, except subterminal which is strongly dentate and whitish; veins towards termen more or less outlined with blackish; cilia dark smoky-fuscous. Hindwings with termen waved; pale ochreous; a fuscous lunate discal mark; a broad fuscous band along termen occupying posterior half of wing; indications of an ochreous line along termen; cilia ochreous, mixed with fuscous on middle of termen and at extremities of veins.

The specimen not being in the best of condition, the description will probably need amplifying.

Mackay, Queensland; one specimen in November.

Ischyja polystigma, n. sp.

Female, 54 mm. Head, palpi, thorax, and abdomen dark fuscous, sparsely irrorated with whitish and with a bluish metallic tinge. Legs greyish-ochreous. Forewings elongate, triangular, costa moderately arched, termen gently rounded, slightly waved; dark fuscous, tinged with bluish metallic reflections, and sparsely irrorated with bluish white scales; lines obscure, dark fuscous; first nearly straight, anteriorly edged with three moderate ochreous-white spots, one below costa, one in middle, and one above innermargin; median not traceable; second strongly curved outwards in middle, sinuate above and below and edged posteriorly throughout by a series of moderate ochreous-white spots; subterminal thick, waved, almost similar and parallel to second line; veins towards termen faintly outlined with ochreous; cilia dark fuscous, with ochreous dots at extremities of veins. Hindwings with termen

as in forewings; color and cilia as in forewings, but basal third of wing and along costa much paler and without any bluish-metallic tinge.

Mackay, Queensland; one specimen in October.

OPHIUSIDÆ.

Hamodes pseudoptera, n. sp.

Male, 64 mm. Head and thorax light ochreous-fuscous, collar black. Antennæ fuscous. Palpi dark fuscous. Legs and abdomen dark fuscous, anterior coxæ ochreous-fuscous. Forewings elongate, triangular, costa faintly sinuate, termen strongly rounded, continuous with innermargin; bright ochreous-fuscous; a round fuscous spot in cell; an inwardly oblique blackish fascia, from costa before middle to half across wing, narrowed beneath; a dark fuscous shade from costa at three-fourths, thence curved and narrowed down to below middle of wing, inclining to be continued to innermargin at half, edged on lower portion by a very fine white line and posterior to that by a moderate ochreous-shade; ground color beyond dark fuscous, separation well defined, leaving a roundish spot of ground color between veins 6 and 7; reniform faintly indicated; an obscure series of fuscous lunate marks along termen; cilia ochreous. Hindwings with apex somewhat prominent; termen nearly straight; dark chestnut, suffusedly irrorated with dark fuscous; basal half of wing semi-transparent; cilia as in forewings. Underside of all wings thickly clothed with blackish hairs, except along innermargin of forewings, which is semi-hyaline, and has a tuft of ochreous hairs at base.

A peculiar looking insect, and very different to any other Australian *Noctua* known to me; the absence of scales on the basal portion of hindwings is a noticeable point of distinction, and the hairy underside of wings is another curious character.

Cooktown, Queensland; one specimen in October.

Ophiusa diagarmma, n. sp.

Female, 34 mm. Head, palpi, antennæ, thorax, legs, and abdomen fuscous. Forewings elongate, moderate, costa nearly straight, termen faintly waved, obliquely rounded; dark fuscous; an oblique narrow ochreous streak from one-fourth costa to one-third innermargin, edged anteriorly with a blackish shade; a similar streak from costa at two-thirds to innermargin at three-fourths, strongly bowed outwards on middle third, edged anteriorly by a broad fuscous-blackish shade, which

becomes smoky-brown on anterior half; a blackish-fuscous apical patch, becoming lighter anteriorly and finely edging second line posteriorly throughout; ground color beyond suffused with whitish; cilia fuscous, with a darker fuscous median line and black spots at extremities of veins. Hindwings with termen slightly waved, rounded; dark fuscous; an obscure whitish transverse ante-median fascia, obscure on lower half; an obscure whitish elongate patch on termen towards anal angle; cilia white, becoming fuscous at apex and middle of termen.

Mackay, Queensland; Derby, Western Australia; two specimens in October and November.

Ophiusa monogona, n. sp.

Female, 46 mm. Head, palpi, and thorax light fuscous, palpi darker beneath. Antennæ ochreous. Abdomen greyish-ochreous. Legs fuscous, tibiæ and tarsi banded with whitish. Forewings elongate, moderate, costa nearly straight, termen faintly waved, obliquely rounded; light ochreous-fuscous; a fine obscure fuscous line at one-sixth, a second, nearly straight, and edged anteriorly with its own width of dull ochreous, from costa at one-fourth to about one-third of innermargin; a small whitish dot below costa beyond; a fine ochreous line from costa at three-fourths to innermargin before anal angle, with a strong outward projection above middle, and strongly curved inwards below; groundcolor between second and this line becoming fuscous especially on post-median portion, which appears to be divided by a faint fuscous transverse line throughout; a dull fuscous-reddish triangular apical spot; a fuscous line along termen; cilia fuscous. Hindwings with rounded, waved; dark fuscous; indications of two faint whitish postmedian lines, space between darker fuscous; cilia white, becoming fuscous on median portion. Underside of all wings pale ochreous-fuscous.

Somewhat allied to *melicerte*, Dru., but the form of the lines is totally different.

Mackay, Queensland; one specimen in November.

Grammodes callixeris, n. sp.

Female, 36 mm. Head, palpi, and thorax fuscous, antennæ whitish, abdomen ochreous. Legs fuscous-whitish. Forewings elongate, triangular, costa hardly arched, termen straight on upper two-thirds, thence rounded to anal angle; fuscous-whitish, costal edge broadly whitish, strongly irrorated with

fuscous; a large dark fuscous triangular patch lying on inner margin, apex reaching nearly to costa; anterior edge from just before base, edged with a line of ochreous-white posterior edge, slightly sinuate, terminating on innermargin at three-fourths, with a sharp angulation above innermargin, sinuate portion edged as on anterior edge; a fuscous triangular spot on costa near apex continued as a line to middle of wing; an obscure subterminal fuscous line; faint fuscous line along termen; cilia dark fuscous. Hindwings with termen rounded; bright orange; a black band along termen, broadest at apex, and indented before anal angle.

The British Museum has this species unnamed from Port Darwin.

Cooktown, Queensland; one specimen in November.

Fodina chrysomera, n. sp.

Female, 28 mm. Head, palpi, and thorax dark fuscous, patagia whitish. Antennæ ochreous, fillet whitish. Abdomen yellow. Legs ochreous. Forewings elongate, triangular, costa almost straight, termen nearly rectangular, black, with reddish-ochreous markings, somewhat carmine-tinged; a moderately thick oblique streak from innermargin close to base just below middle of costa; a broad oblique streak from apex of preceding streak to termen just above anal angle, thus enclosing a large triangular patch of ground color, which is only separated from innermargin by a streak of yellowish, which is continued the whole length of innermargin; a narrow transverse streak from costa at four-fifths to posterior extremity of second streak, gently curved outwards on upper half; a narrow streak along termen; cilia blackish. Hindwings with termen rounded; bright orange; a moderate black band along termen, containing a streak of crimson along lower half; cilia as in forewings.

Broken Hill, New South Wales; one specimen in March.

NOCTUINA.

Corula (?) mesoleuca, n. sp.

Male, 30 mm. Head, palpi, and thorax light fuscous. Antennæ, abdomen, and legs grey. Forewings elongate, triangular, costa moderately arched, termen rounded; light brownish; a pair of nearly parallel dark fuscous lines, first at one-fourth, second just beyond, limiting median patch, and tending to be furcate on lower third; ground color between last line and base somewhat darker than rest of wing; a rather

broad transverse white fascia in middle of wing reaching both margins, much dilated on lower half; anterior edge straight; posterior edge dentate; a suffused dentate fuscous subterminal line, dentations appearing to be continued along veins towards termen; cilia whitish, basal half fuscous, spotted with dark fuscous at extremities of veins. Hindwings with termen rounded; dull whitish, suffused with light fuscous along termen, and more broadly towards apex; cilia whitish, with a fuscous parting line.

Not unlike specimens of *Nola*, (*Nolidæ*).

Cooktown, Queensland; one specimen.

CORULA HYPOTHERMA, n. sp.

Female, 26 mm. Head, palpi, and thorax ashy-grey. Antennæ fuscous. Abdomen reddish. Legs grey-whitish, tibiæ and tarsi fuscous, ringed with whitish. Forewings elongate, dilated posteriorly, costa gently arched, termen oblique, bowed in middle; ashy-grey-fuscous, becoming whitish in middle of wing; lines blackish; rather obscure; an oblique line from one-fourth of costa to one-fourth of innermargin; a second, finely dentate throughout, nearly straight, from costa at about two-thirds to innermargin before two-thirds, slightly angulated in middle; subterminal nearly straight, white preceded by a fuscous shade; a row of black dots before and parallel to termen; cilia flesh color. Hindwings with termen somewhat sinuate in middle, at apex and above innermargin somewhat prominent; dull fleshy-red; a broad, blackish band along termen; cilia as in forewings.

Mackay, Queensland; one specimen in December.

FOCILLIDÆ.

ZETHES SYNDESMA, n. sp.

Male, 26 mm. Head and thorax greyish-fuscous. Palpi fuscous. Abdomen grey. Antennæ fuscous. Legs white, tarsi fuscous, banded with whitish. Forewings elongate, triangular, costa hardly arched, termen dentate, strongly angulated in middle; greyish, irregularly suffused with fuscous, especially median third of wing, which is limited anteriorly by a curved suffused line at one-third, and posteriorly by dentate line two-thirds of costa to beyond middle of innermargin curved outwards on upper half, a waved dull whitish subterminal from costa at four-fifths to innermargin before anal angle, edged posteriorly by its own width of fuscous; ground color between this and posterior line of median band much lighter and clearer; ground color beyond subter-

minal, darker fuscous on upper half; a short whitish oblique streak from apex; an indistinct row of fuscous dots before termen; cilia greyish, with a fuscous median line. Hindwings with termen dentate; pale slaty-grey, becoming light fuscous on basal fourth; lines and dots as in forewings, lines rather indistinct; cilia greyish.

Mackay, Queensland; one specimen in November.

EGNASIA PSAMMOCHROA, n. sp.

Male, 30 mm. Head and thorax greyish-ochreous. Palpi grey-whitish, coxæ ochreous, abdomen greyish-ochreous. Forewings elongate, triangular, costa hardly arched, termen somewhat bowed, oblique, faintly sinuate beneath apex; ochreous, suffused with light fuscous; a fine obscure fuscous line from one-third of costa to innermargin at one-fourth, hardly traceable on lower half; a fine fuscous dentate line from costa at four-fifths to innermargin at two-thirds, gently curved outwards throughout, followed on costa by a minute whitish spot, a similar spot on costa at five-sixths, from which proceeds a subterminal row of small black dots, parallel to termen; ground color between dots and line tinged with ochreous ferruginous; orbicular small, obscure, whitish; reniform elongate, narrow, strongly indented in middle, edged above and below by a short median shade, which reaches costa, but not innermargin; cilia greyish-ochreous. Hindwings with termen faintly angulated in middle; first, subterminal lines and dots as in forewings; cilia as in forewings. Underside of hindwings with small whitish discal ring edged with fuscous.

Mackay, Queensland; one specimen in December.

THERMESIIDÆ.

CAPNODES NIPHOMACULA, n. sp.

Female, 36 mm. Head, palpi, antennæ, thorax, legs, and abdomen light brownish-ochreous, palpi with a snow-white spot at apex of terminal joint, antennæ with a snow-white spot at base of antennæ, legs and abdomen ochreous beneath. Forewings elongate, triangular, costa gently arched, termen rounded, oblique; light brownish-ochreous; markings snow-white; a spot on base of costa; a second on base of innermargin; a third on costa at one-fourth, another on costa beyond middle; a fifth in disc below third; sixth on fold obliquely below fifth; a seventh on fold just beyond; and a curved row of about six smaller ones in middle of wing at about two-thirds from base; an obscure series of small whitish-

fuscous along termen; cilia fuscous. Hindwings with termen rounded; color and cilia as in forewings; curved series and dots along termen as in forewings.

Mackay, Queensland; one specimen in October.

Mecodina asbolæa, n. sp.

Male, 36 mm. Head, thorax, and abdomen dark smoky-fuscous. Palpi ochreous, terminal joint obscurely ringed with light fuscous, second joint broadly dark fuscous at base. Antennæ ochreous-fuscous. Forewings elongate, triangular, costa hardly arched, termen waved, obliquely rounded; dark smoky-fuscous; all markings obscured, but there appear to be some darker waved lines, only noticeable on margin and terminal area of wing; cilia fuscous, with some ochreous spots at extremities of veins. Hindwings with termen waved, rounded; color, markings, and cilia as in forewings; an indistinct waved ochreous line, from below apex to innermargin before anal angle. Underside of forewings ochreous-fuscous, mixed with grey-whitish; orbicular round, moderate, blackish; reniform elongate, rather narrow, blackish; a nearly straight rich blackish line, from costa at two-thirds to innermargin at two-thirds, slightly angulated in middle; area of wing between this and termen much more fuscous, with an ochreous waved subterminal line. Hindwings deep ochreous-fuscous; two or three blackish waved streaks from innermargin in middle; ochreous line of upperside strongly reproduced and much more distinct, edged anteriorly by a broad rich fuscous shade.

An obscurely marked species above, but very clearly marked beneath.

Cooktown, Queensland; one specimen in October.

Mecodina semophora, n. sp.

Male, 40 mm. Head, palpi, thorax, legs, and abdomen dark fuscous, palpi internally ochreous, thorax darker anteriorly, tarsi with whitish rings. Antennæ fuscous, pectinations ochreous. Forewings elongate, triangular, costa gently arched, termen oblique, slightly rounded; dark ochreous-fuscous; lines darker fuscous, rather obscure, first waved, from about one-fifth costa to one-fourth innermargin; median nearly straight; second very faint, curved outwards above middle and slightly angulated above innermargin; subterminal bowed outwards in middle, sinuate above and below, dot-like and more or less edged posteriorly with ochreous; a row of obscure fuscous dots along termen; reniform ovoid, deep black; cilia fuscous. Hindwings with termen rounded, faintly waved; color and

markings as in forewings, but subterminal entire and better defined; cilia as in forewings.

Cooktown, Queensland; one specimen in October.

ERASTRIANÆ.

Raparna marmorea, n. sp.

Female, 25 mm. Head, palpi, antennæ, thorax, and abdomen light reddish-ochreous. Legs greyish. Forewings elongate, moderate, costa hardly arched, termen rounded, oblique, apex somewhat prominent; ochreous, mixed with dull reddish; two or three irregular streaks of dull reddish from costa towards innermargin; two small black dots, transversely placed, in middle of disc; a broad coppery-purplish patch, outer edge nearly straight from costa at apex to innermargin at one-fourth, dark anteriorly, and containing a large roundish spot of ground color at anal angle, mixed with reddish and with a fine waved whitish line, indicating subterminal, in middle; a fine bluish-metallic waved line, from costa before apex to innermargin at two-thirds, indented at one-third and with a strong sinuation below middle; a row of blackish dots before termen, more or less edged posteriorly with dull purplish flecks; cilia ochreous, at base blackish. Hindwings with termen waved, prominent in middle and below apex; light coppery purplish; basal one-sixth of wing ochreous, separation well defined; a post-median band of light reddish orange, containing on innermargin near a short irregular streak of deep reddish scales; blackish dots along termen as in forewings; a fine fuscous line along termen; cilia dull reddish-orange.

A beautifully marked insect.

Duaringa, Queensland; one specimen in November.

Raparna byrsopa, n. sp.

Female, 24 mm. Head, palpi, and thorax blackish, head and thorax mixed with dull whitish, palpi internally dull-ochreous. Antennæ fuscous. Legs greyish. Forewings elongate, triangular, costa slightly arched, termen slightly waved, rounded; blackish-fuscous, crossed by several waved irregular transverse dull whitish lines; all markings except median line obscured by general ground color; median line moderately thick, black angulated outwards above middle, from before middle of costa to before middle of innermargin; subterminal line dull whitish, moderately prominent, waved; a row of sharply defined black dots along termen, preceded by a row of similar sized whitish dots; cilia dark fuscous. Hindwings with termen waved; color, markings, and cilia as in

forewings; first line just traceable and containing in its centre a roundish ring of blackish scales.

Cooktown, Queensland; one specimen in December.

METACHROSTIS SCIAPTERA, n. sp.

Male, 22 mm. Head, palpi, antennæ, thorax, and abdomen fuscous, abdomen darker, anal tuft greyish-ochreous. Legs dark fuscous, more or less ringed with whitish-ochreous. Forewings elongate, triangular, costa slightly arched, termen obliquē, faintly waved; light fuscous, median two-thirds of wing dark fuscous, limited anteriorly by first line, posteriorly by second line; first line waved, becoming dark fuscous below middle; median gently curved throughout, fine, waved; second from costa just above reniform to just beyond two-thirds of innermargin, with a strong angulation beneath costa, thence oblique to termination; orbicular indistinct; reniform large, placed somewhat obliquely, whitish, edged on either side with a short patch of dark fuscous; subterminal absent; area of wing beyond lighter than rest; a row of small black marks along termen; cilia light fuscous. Hindwings light fuscous; base slightly clothed with greyish-ochreous hairs; cilia fuscous-whitish.

Mackay, Queensland; one specimen in October.

BLEPTINA ODONTIAS, n. sp.

Male, 30 mm. Head, palpi, thorax, antennæ, and abdomen light ochreous-fuscous. Legs ochreous, tibiæ and tarsi dark fuscous. Forewings elongate, triangular; costa gently arched, termen not waved, obliquely rounded; light ochreous, faintly tinged with fuscous; lines fuscous, very fine, obscure; first waved, indented below costa and slightly angulated outwards above innermargin; median not traceable; second nearly straight, strongly dentate throughout, slightly curved beneath costa; subterminal grey-whitish, waved; angulated outwards above and below middle, and edged anteriorly by a narrow fuscous shade, and posteriorly by a similar shade, excepting in middle; a row of small black marks along termen; cilia ochreous. Hindwings with termen rounded; a fuscous discal spot; second, subterminal line and shades and dots as in forewings, but dots more elongate; cilia ochreous.

Mackay, Queensland; one specimen in October.

PLUSIADÆ.

PROCONIS EULOPHA, n. sp.

Male, 28 mm. Head, palpi, and thorax cinereous-fuscous, antennæ fuscous, pectinations 6, ochreous. Legs and abdomen

greyish-ochreous, crest of abdomen fuscous. Forewings elongate, moderate, costa moderately arched, termen waved, rounded; cinereous-fuscous, markings black; a fine line from costa at one-third to innermargin at one-third, strongly sinuate inwards in middle, angulated above innermargin; a fine thrice-waved line from anterior edge of reniform to three-fourths innermargin; a twice-waved line from costa at three-fourths curved around strongly to lower edge of reniform, some short oblique strigulations along costa; a fine waved line along termen; orbicular indistinct; reniform elongate, outlined with a fine black line; cilia cinereous-fuscous. Hindwings with termen unevenly waved; white; a fine fuscous line along termen; cilia white, with some blackish points at extremities of veins.

Broken Hill, New South Wales; one specimen in May.

Prorocopis stenota, n. sp.

Female, 25 mm. Head, palpi, antennæ, and thorax ashy-grey-fuscous, palpi beneath grey-whitish. Legs and abdomen whitish. Forewings elongate, dilated posteriorly, costa hardly arched, termen waved, oblique; ashy-grey-whitish, more or less very finely strigulated with blackish; a fine nearly straight black line from costa at one-sixth to three-fourths across wing; a nearly straight thicker black line, from one-third of costa to one-third innermargin; a moderately thick black line from costa at about two-thirds to about two-thirds across wing, thence curved up to near costa and thence curved again and returning to innermargin beyond two-thirds; a suffused nearly straight blackish line between first and second lines; submarginal line obscure, preceded by two or three similar lines, most noticeable on innermargin; a fine shortly waved black line from apex, thence curved outwards and ending on termen above anal angle; a short blackish line at anal angle; a fine black waved line along termen; cilia ashy-grey-whitish. Hindwings with termen rounded, faintly waved; white; a moderately broad blackish band along termen, upper edge almost straight; line along termen as in forewings; cilia white. Underside of forewing silvery-whitish, with a fuscous apical patch.

Broken Hill, New South Wales; one specimen in October.

Prorocopis adelopis, n. sp.

Male, 27 mm. Head, palpi, antennæ, and thorax cinereous-grey, palpi beneath whitish, thorax with an erect dense posterior crest. Abdomen whitish-grey, with a blackish crest on

basal segment. Legs whitish-fuscous, tibiæ and tarsi dark fuscous, suffusedly banded with whitish. Forewings elongate, dilated posteriorly, costa gently arched, termen faintly waved, oblique; cinereous-grey; markings black, rather obscure; first close to base, with two acute angulations below costa, thence curved around and ending on innermargin at one-sixth; a similar line, from costa at one-third to innermargin at one-third; a faint blackish-edged whitish spot below costa beyond, indicating orbicular; reniform large outlined with fine black line, and filled in with cinereous-grey; second line from costa before reniform, thence along upper edge of same, and thence very strongly curved outwards to considerably beyond, and again returning to lower edge of reniform, thence sinuate inwards, finally ending on innermargin at four-fifths; subterminal obscure, waved, hardly traceable; a waved line along termen; cilia ashy-grey-fuscous. Hindwings with termen faintly waved, rounded; dull white; a faint fuscous band along termen; cilia white. Underside of forewings silvery-whitish without markings.

Allied to the preceding, but the angulated first and median lines and almost unicolorous hindwings are good distinctive points.

Broken Hill, New South Wales; one specimen in October.

PROROCOPIS LEUCOCROSSA, n. sp.

Male, 28 mm. Head, palpi, antennæ, and thorax cinereous-grey, palpi whitish beneath. Legs whitish, tibiæ and tarsi fuscous, obscurely banded with whitish. Abdomen ochreous-fuscous. Forewings elongate, moderately dilated posteriorly; termen waved, obliquely rounded; lines black, fairly well defined; a short outwards line at one-sixth of costa; first line moderately and evenly curved outwards, with a slight projection above middle; median line indistinct, only noticeable on costa; second line and reniform spot formed as in *adelopis;* a very pale whitish transverse streak from costa at five-sixths to more than two-thirds across wing; subterminal obscure, fuscous, just beyond; a waved black line along termen; cilia cinereous-grey, with fuscous streaks at extremities of veins. Hindwings with termen gently waved; whitish-fuscous, posterior half of wing fuscous, deeper along termen; cilia white.

Very close to the previous species, but differs in shape and form of lines, and absence of crests.

Broken Hill, New South Wales; one specimen in October.

HYPENINÆ.

Avitta eurrhoa, n. sp.

Female, 54 mm. Head, palpi, antennæ, thorax, and abdomen ochreous-fuscous, palpi dark fuscous externally. Legs dark fuscous, anterior tibiæ ochreous-whitish. Forewings elongate, triangular, costa hardly arched, termen rounded; ochreous-fuscous; markings fuscous, moderately developed; a short curved mark near base of costa; a moderately broad fascia from costa at one-fourth to innermargin at one-fourth; a parallel fascia from costa at about one-fourth to innermargin at one-fourth; a broader fascia from costa at about two-thirds to middle of innermargin, anterior edge oblique, darker fuscous, with a slight angulation above innermargin, posterior edge obscure, slightly angulated in middle; a broad band along terminal third of wing, anterior edge irregular, sinuate in middle, from costa at four-fifths to innermargin at about two-thirds; a row of obscure fuscous dots along termen; cilia fuscous. Hindwings unevenly waved; dark, fuscous, lighter or basal third and with some scattered blackish strigulæ towards terminal area; cilia fuscous.

Mackay, Queensland; one specimen in October.

Labanda amabilis, n. sp.

Female, 36 mm. Head and thorax fuscous, suffusedly mixed with mossy-green. Antennæ and palpi fuscous. Abdomen and legs ochreous-orange, legs beneath whitish. Forewings elongate, triangular costa gently arched, termen rounded; dark fuscous, strongly and suffusedly mixed with moss-green and whitish scales; markings fuscous, tolerably well developed; a waved line from costa at one-fifth of costa to one-fifth innermargin; median line, strongly waved and with strong indentations below costa and above innermargin; ground color between first and median lines darker fuscous; second line, strongly dentate throughout and with a tri-dentate projection in middle, edged above and below mixed with whitish scales, more pronounced on lower portion; subterminal moderately straight, rather obscure on upper half; a short upwardly oblique streak from about middle of termen to above middle of subterminal; a short streak along upper third of termen; a fine line along termen; cilia blackish. Hindwings with termen rounded; bright orange; a fuscous band along termen, broadest at apex and gradually narrowing to extremity; cilia fuscous.

A handsome and easily recognised species.

Mackay, Queensland; one specimen in October. I have seen a specimen from Cooktown, Queensland.

Xanthoptera euchrysa, n. sp.

Female, 20 mm. Head, palpi, antennæ, and thorax dull reddish-fuscous. Abdomen and legs whitish, abdomen reddish-tinged. Forewings elongate-triangular, costa hardly arched, termen oblique, slightly prominent in middle; dull ochreous-brownish; lines whitish, waved, edged anteriorly with fuscous; first twice curved, very close to base; median with three nearly even curves, from before middle of costa to before middle of innermargin; a subterminal waved white line, anteriorly edged with fuscous, from costa before apex to innermargin before three-fourths; orbicular white, fuscous, ringed with white; reniform large, white, centred with light fuscous; terminal area of wing whitish-fuscous; a fuscous line along termen; cilia fuscous. Hindwings with termen rounded; fuscous; cilia as in forewings.

Cooktown, Queensland; one specimen in October.

Xanthoptera macrosema, n. sp.

Female, 24 mm. Head, palpi, antennæ, and thorax fuscous, palpi with two fuscous bands. Legs fuscous. Abdomen greyish. Forewings elongate, triangular, costa slightly arched, termen hardly waved, obliquely rounded; fuscous, suffusedly irrorated on either side of median third with fine whitish scales; first line dentate, black; a dull whitish mark on costa at one-fourth, from posterior edge which precedes median line to just beyond one-third of innermargin; second line curved outwards on upper half, sinuate on lower half, edged anteriorly on upper half by short streaks of black, which become more elongate on lower half; a parallel row of fine white points immediately beyond second line; subterminal irregularly waved, sinuate above and below middle, more or less edged anteriorly with blackish streaks; a row of lunate marks along termen; cilia fuscous. Hindwings with termen unevenly waved, faintly indicated; fuscous; cilia greyish, with a fuscous median line.

Brisbane, Queensland; one specimen in October.

Mecistoptera lithochroa, n. sp.

Female, 24 mm. Head, palpi, antennæ, thorax, legs, and abdomen whitish. Forewings elongate, triangular, costa gently arched, apex produced, termen prominent in middle, sinuate beneath apex; dull whitish, with a few scattered fuscous scales; an interrupted subterminal row of small suffused blackish spots, most prominent below costa, where there are two larger in middle; a fine fuscous line along termen; cilia

grey-whitish. Hindwings with termen rounded; dull whitish, faintly fuscous-tinged on posterior half; cilia as in forewings.

Duaringa, Queensland; one specimen in December.

Hypena (?) rhynchophora.

Male, 14 mm. Head, palpi, antennæ, thorax, and abdomen greyish-fuscous, palpi darker internally, antennæ strongly bi-ciliated. Legs dull whitish. Forewings elongate, triangular, costa moderately arched, termen oblique; light fuscous; lines blackish, more or less interrupted into spots; first moderately straight; median angulated above middle, from middle of costa to just beyond middle of innermargin, edged posteriorly by some whitish dots, becoming ochreous on angulation; an outwards curved line in disc at two-thirds, with one or two white dots posteriorly; a row of elongate dots along termen, faintly edged anteriorly with whitish; orbicular, fuscous, spot-like; reniform represented by the ochreous spot on angulation of median line; cilia ochreous-fuscous. Hindwings fuscous, lighter on basal half; cilia as in forewings.

Not unlike some species of *Sorocostia* (*Nolidæ*).

Cooktown, Queensland; one specimen in November.

Hypena melasticta, n. sp.

Male, 30 mm. Head, palpi, antennæ, thorax, legs, and abdomen dark smoky-fuscous. Forewings elongate, triangular, costa hardly arched, termen faintly waved, apex somewhat pointed, more or less bowed in middle; dark smoky-fuscous; first and median lines obscured; second line from costa beyond two-thirds to innermargin beyond two-thirds, with two angulations above and below middle, edged posteriorly by a fine line of dull ochreous; wing from this line to base darker than rest; two black posteriorly whitish edged spots beneath costa near apex; and indications of two or three similar spots below; terminal area of wing irregularly mixed with bluish-white minute scales; a fine fuscous line along termen; cilia fuscous, with faint ochreous points at extremities of veins. Hindwings with termen slightly waved, rounded; dark fuscous, somewhat bronzy-tinged; cilia as in forewings.

Mackay, Queensland; one specimen in October.

PYRALIDINA.

GALLERIANÆ.

Melissoblaptes agramma, n. sp.

Female, 16 mm. Head, palpi, antennæ, and thorax cinereous-grey. Abdomen greyish-ochreous, with some silvery-

white scales. Legs greyish. Forewings rather narrow, elongate, costa strongly arched, termen very oblique; cinereous-grey, with a few black scales, and indications of whitish interneural streaks towards termen; a suffused dark fuscous patch of scales, resting on basal fourth of wing; a fine fuscous line along termen; cilia greyish-fuscous. Hindwings with termen nearly straight, apex prominent, pale grey-whitish, darker along termen; cilia whitish-grey.

Mackay, Queensland; one specimen in poor condition in October.

ELDANA LEUCOSTICTALIS, n. sp.

Male, 26 mm. Head, palpi, antennæ, and thorax pale fleshy-red. Legs fleshy-white. Abdomen greyish-ochreous. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; deep fleshy-red, deepest on costal half; a small dull whitish spot in middle of wing at one-third from base; a second, much smaller in a longitudinal line at one-third, and a third midway between these two; cilia deep reddish. Hindwings with termen rounded, slightly sinuate beneath apex, apex prominent; greyish, faintly tinged with fuscous, on posterior half; cilia light fleshy-red, with a dark fuscous subbasal line.

Brisbane, Queensland; one specimen in January.

CRAMBINÆ.

CIRRHOCHRISTA CYCLOPHORA, n. sp.

Male, 24 mm. Head, palpi, antennæ, thorax, legs, and abdomen snow-white, palpi laterally orange, anterior tibiæ and tarsi orange, tarsi with whitish wings, middle and posterior legs mixed with orange; forewings elongate, triangular, costa nearly straight, termen oblique; snow-white; a narrow orange costal streak throughout; a small triangular fuscous tooth on lower edge at one-third, emitting an almost straight ferruginous interrupted line to innermargin at two-fifths; a similar tooth from lower edge of costal streak beyond middle, accompanied by a spot below; an oval fuscous ring just below spot midway between it and innermargin; a fine waved fuscous line, from costa at four-fifths to innermargin at four-fifths; a well-defined deep fuscous somewhat lunulate line along termen, very shortly continued along veins; cilia ochreous-fuscous, deeper on basal half. Hindwings with termen rounded; color, posterior and line along termen as in forewings; cilia as in forewings, becoming snow-white at anal angle.

Mackay, Queensland; one specimen in October.

I have seen specimens from Townsville.

Crambus photoleuca, n. sp.

Female, 16 mm. Head, palpi, thorax, and abdomen snow-white; palpi fuscous laterally. Antennæ fuscous. Legs white, strongly suffused with ochreous-fuscous. Forewings elongate, moderate, costa gently arched, termen oblique; shining snow-white; markings pale fuscous, obscure; one or two elongate streaks along costa, from one at three-fourths proceeds a fine line curved outwards to before middle of termen, thence continued before and parallel with termen to innermargin before anal angle; a small ferruginous spot on costa near apex; a fine line along termen, cilia shining snow-white, with two or three fuscous dots on middle of termen. Hindwings with termen rounded; very pale whitish-fuscous; cilia snow-white. Underside of forewings fuscous, of hindwings snow-white.

A peculiar and noticeable point is the reversal of colors on underside of wings.

Mackay, Queensland; one specimen in January.

Talis stenipteralis, n. sp.

Male, 20 mm. Head, palpi, thorax, and legs dull ochreous-fuscous, palpi six times as long as eye. Antennæ whitish, ciliations (1), fuscous, abdomen greyish-ochreous. Forewings rather narrow, elongate, apex nearly straight, termen very oblique; dull ochreous-fuscous; a narrow ochreous-white subcostal streak from base to three-fourths, edged below by its own width of dark fuscous, which color becomes trifurcate at extremity, and is continued along veins to termen; a narrower ochreous white line just beneath fuscous streak from base to three-fourths, and a similar one along fold, both more or less edged with fuscous; dorsal area of wing paler than rest, and minutely irrorated with fuscous and blackish scales; cilia ochreous-fuscous. Hindwings with termen faintly sinuate in middle; light fuscous; cilia greyish fuscous.

A peculiar-looking insect, not very near any of the other described species; it is, perhaps, nearest *cyclosema*, Lower.

Broken Hill, New South Wales; one specimen in October.

Talis eremenopa, n. sp.

Female, 16 mm. Head, palpi, antennæ, thorax, and legs fuscous, palpi 4, whitish internally. Abdomen greyish-ochreous, anal tuft whitish. Forewings elongate, triangular, costa nearly straight, termen oblique; ochreous-fuscous, suffusedly mixed with white, and with scattered blackish scales; an elongate-cuneiform white streak from base to beyond middle,

broadest posteriorly; a black-edged reniform discal spot in middle at two-thirds, centred with white, anteriorly broadly edged by an oblique streak of white, which reaches from costa to two-thirds across wing; a broad leaden-metallic transverse patch of scales beyond discal spot, from upper edge of spot to innermargin at anal angle; a white costal patch immediately above; a gently curved ochreous streak from costa beyond last spot to anal angle, bordering the leaden metallic patch posteriorly and becoming golden metallic on lower two-thirds; six short black elongate streaks before termen, resting upon three white spots; one at apex, curved; one in middle, cuneiform; and one somewhat quadrate above anal angle; a narrow white streak along termen; cilia ochreous-fuscous, barred with snow-white. Hindwings with termen rounded, faintly sinuate beneath apex; shining whitish-grey, thinly scaled; a fuscous line along termen; cilia shining snow-white.

Another species of doubtful affinity.

Stawell, Victoria; one specimen in April.

ANERASTINÆ.

Anerastia minoralis, n. sp.

Male, 12 mm. Head, palpi, antennæ, and legs light-ochreous-fuscous, abdomen greyish-ochreous. Forewings elongate, moderate, costa moderately arched, termen oblique; light ochreous; a silvery-white longitudinal line from base to apex, commencing beneath costa at base and reaching costa before apex, edged at apex beneath with fuscous; a similar streak along fold, from base to termen, obscure; cilia greyish-ochreous, paler at base. Hindwings with termen rounded; light greyish-fuscous; cilia grey, with a light fuscous, basal line.

Mackay, Queensland; one specimen in October.

Anerastia xiphimela, n. sp.

Male, 20 mm. Head, palpi, antennæ, legs, and abdomen dark fuscous. Abdomen ochreous-grey. Forewings elongate, moderate, costa gently arched, termen oblique, rounded beneath; pale fleshy-red, fuscous tinged; veins faintly outlined with fuscous; a moderately thick blackish longitudinal streak, broadest on posterior half, from beneath costa at base to termen below apex; a fuscous irregular suffusion on middle of innermargin; a few fuscous dots below streak at one-third; cilia dull fleshy-red. Hindwings with termen rounded; pale greyish, thinly scaled; a fuscous line along termen on upper half; cilia greyish, with a fuscous basal line.

Cooktown, Queensland; one specimen in August.

Phycita deltophora, n. sp.

Male, 25 mm. Head, palpi, antennæ, thorax, and abdomen cinereous-grey, palpi ferruginous at apex. Legs silvery-whitish, mixed and banded with fuscous. Forewings elongate, moderate, costa rather strongly arched, termen oblique; cinereous-grey, finely irrorated with dark fuscous; an elongate, somewhat cuneiform reddish-fuscous fascia from one-third costa to one-third innermargin, slightly oblique, edged on sides with a dentate black line; and rather broadly posteriorly with a whitish fascia, sharply defined anteriorly, posteriorly suffused with a short angulated line in middle on lower half; a dull whitish mark on costa at four-fifths, from which proceeds an obscure, slightly outwards whitish curved line of dots to innermargin before anal angle, edged anteriorly with fuscous; a black interrupted line along termen, separated by streaks of dull whitish. Hindwings with termen rounded; greyish, thinly scaled; a fine fuscous line along termen; cilia greyish, with a fuscous, subterminal line.

Mackay, Queensland; one specimen in November.

Phycita leucomilta, n. sp.

Male and female, 28 mm. Head, palpi, antennæ, thorax, legs, and abdomen reddish-ferruginous, more or less finely irrorated with bluish-white scales in female. Forewings elongate, moderate, costa moderately arched, termen slightly bowed, oblique; reddish-ferruginous in female more or less minutely irrorated throughout with bluish-white scales, base of wing ferruginous; a narrow outwardly fleshy-white narrow fascia, from costa at one-third to innermargin before middle, posteriorly edged by a somewhat cuneiform patch of darker ground color; a narrow fleshy-white line from costa at four-fifths to innermargin before anal angle, strongly curved outwards in middle, edged on upper third by a patch of darker ground color; a lighter patch of ground color just before this; a row of small black spots along termen; all markings in female obliterated by general ground color; cilia fleshy-red, with a clear whitish median line. Hindwings greyish-ochreous; cilia ochreous, basal half reddish.

Not unlike *Euzophera pyrrhoptera*, Lower, but the palpi make it easy of separation from that species.

Mackay, Queensland; two specimens in October.

Nephopteryx orthozona, n. sp.

Female, 20 mm. Head, palpi, antennæ, and legs cinereous-grey, basal joint of palpi fuscous. Abdomen greyish-ochreous.

Forewings elongate, moderate, costa gently arched, termen oblique, faintly sinuate beneath apex; cinereous-grey; a fine black slightly curved line, from costa near middle to innermargin in middle, anteriorly edged with its equal width of white; a second similar line from costa at four-fifths to innermargin before anal angle, gently curved outwards in middle, and edged by a parallel line of fuscous, separated by a line of ground color; ground color between the two black lines strongly suffused with white, especially on lower half; a row of fine black dots along termen; cilia cinereous-grey, with two darker fuscous lines. Hindwings with termen rounded; greyish, thinly scaled; a fine fuscous line along termen; cilia greyish, with a fuscous subbasal line.

Cooktown, Queensland; one specimen in December.

Nephopteryx ereboscopa, n. sp.

Female, 28 mm. Head reddish, palpi, antennæ, thorax, and legs ashy-grey-fuscous, terminal joint of palpi fuscous, tibiæ and tarsi fuscous, with dull whitish rings. Forewings elongate, moderately dilated posteriorly, costa gently arched, termen rounded, oblique; deep ferruginous-fuscous, obscurely mixed with whitish; markings obscure; a short fuscous mark near base, edged with dull whitish basally; a moderately broad dull whitish fascia, from costa at one-fourth obliquely outwards to innermargin at about one-third, with a central ferruginous-fuscous streak throughout; a dark fuscous spot above middle in disc at two-thirds; a very dull whitish subterminal line, curved outwards in middle, edged anteriorly by a fuscous, somewhat dot-like line, and posteriorly by a fuscous shade; a row of small dots along termen; cilia fuscous-whitish, with a ferruginous median line. Hindwings with termen rounded; pale grey-whitish, becoming fuscous-tinged around apex and along termen; cilia grey-whitish, with a fuscous, subbasal line.

Brisbane, Queensland; one specimen in April.

I have a specimen from Cairns.

Nephopteryx hades, n. sp.

Female, 24 mm. Head, palpi, antennæ, thorax, legs, and abdomen dark fuscous, inclining to blackish, tibiæ and tarsi with faint whitish rings, abdomen with dull silvery-white segmental rings. Forewings elongate, moderately dilated posteriorly, costa gently arched, termen oblique; blackish; markings obscure; a faint blackish line from one-third costa to one-third innermargin; a blackish waved subterminal line, curved outwards in middle, followed by an obscure parallel blackish

shade; a row of black dots along termen; cilia blackish. Hindwings with termen irregularly rounded; pale grey-whitish, somewhat iridescent; costa, apex, and a line along termen fuscous-tinged; cilia greyish, with a fuscous subbasal line.

Appears to be somewhat allied to the preceding.

Brisbane and Mackay; two specimens in November.

NEPHOPTERYX DASYPTERA, n. sp.

Male and female, 18-22 mm. Head, palpi, antennæ, thorax, and legs ashy-grey-fuscous, paler in female; abdomen ashy-grey, more ochreous in female. Forewings elongate, moderately dilated, costa gently arched, termen obliquely rounded; dark fuscous, minutely irrorated with ashy-grey scales, so as to appear ashy-grey-fuscous; paler in female; lines very obscure; an outwardly oblique fuscous line from costa at one-third to innermargin at about middle, edged anteriorly by its own width of whitish; a waved fuscous subterminal line, followed by a parallel row of obscure fuscous spots; a row of black dots along termen; cilia cinereous-fuscous. Hindwings with termen unevenly rounded; greyish-fuscous, greyish in female, thinly scaled; cilia greyish, with a fuscous subbasal line.

Also allied to the two preceding; it is somewhat difficult to give reliable points of distinction, but the species when placed together are easily recognised. The present species differs by the shorter and narrower wings and obscure markings. The female is much whiter than the male, and the markings are almost obliterated.

Mackay, Queensland; two specimens in April.

NEPHOPTERYX THERMALOPHA, n. sp.

Male and female, 18-20 mm. Head, palpi, antennæ, thorax, legs, and abdomen cinereous-whitish. Forewings elongate, posterior moderately dilated; costa hardly arched, termen oblique, hardly rounded in male; cinereous-whitish; markings fuscous; a moderately broad fascia from costa at one-third to innermargin at one-third, curved outwards in middle, and edged anteriorly by a whitish shade; in female the fascia is fuscous without any white shade, that color being replaced by a dull ochreous streak, on which is placed a small tuft of raised blackish scales in middle; two small adjacent discal dots at two-thirds from base; a moderately thick fuscous line, from costa at three-fourths to innermargin at two-thirds strongly sinuate outwards in middle and edged posteriorly by its own width of whitish throughout, less developed in female; a row of black dots along termen; cilia cinereous-whitish. Hind-

wings with termen rounded, somewhat sinuate beneath termen; pale grey-whitish, somewhat iridescent; apex, costa, and line along termen fuscous; cilia grey-whitish; with an obscure fuscous subbasal line.

Not unlike *Phycita deltophora*, but the tuft of scales is a reliable point of distinction.

Brisbane and Mackay, Queensland; two specimens in December and January.

Nephopteryx metasarca, n. sp.

Male, 16 mm. Head, palpi, thorax, and legs cinereous-whitish. Antennæ and abdomen ochreous. Forewings elongate, moderately dilated posteriorly, costa slightly arched, termen oblique; fuscous-whitish; a nearly straight narrow transverse fascia at one-third; a second just beyond, narrower on lower half; interspace more white; a rather broad white transverse nearly straight fascia following second fuscous fascia, and containing a fuscous dot on posterior edge above middle; a faintly indicated subterminal whitish line, curved outwards in middle, edged on either with darker ground color; a row of fuscous dots along termen; cilia cinereous-fuscous. Hindwings with termen rounded; ochreous; cilia ochreous-grey.

Brisbane, Queensland; one specimen in January.

Tephris glaucobasis, n. sp.

Female, 22 mm. Head dull whitish. Antennæ and palpi fuscous, palpi whitish beneath. Thorax and legs cinereous-whitish. Abdomen grey-whitish, anterior segment with metallic-coppery reflections. Forewings elongate, moderately dilated posteriorly, costa gently arched, termen oblique; ashy-grey fuscous; a whitish elongate patch from base to middle occupying upper half of wing; ground color below to inner-margin brownish-ochreous, mixed with blackish; an obscure rather thick short fascia at posterior end of elongate patch; below which is a small whitish space, upon which rests an elongate black mark; indications of a fuscous subterminal line, ground color beyond more whitish; a blackish spot above inner-margin; a row of black dots along termen; cilia ashy-grey, with a reddish terminal line and a row of black points at base. Hindwings with termen rounded; greyish-white, somewhat iridescent; thinly scaled; cilia greyish, with a fuscous subbasal line.

Mackay, Queensland; one specimen in November.

Euzopherodes allocrossa, n. sp.

Male, 14 mm. Head, thorax, abdomen, and legs cinereous-whitish, tibiæ and tarsi banded with fuscous. Palpi antennæ fuscous, palpi beneath ochreous. Forewings elongate, rather narrow, costa hardly arched, termen oblique, slightly rounded; cinereous-whitish, with well-defined black markings; a narrow fascia close to base, continued as a fine line shortly along innermargin, interrupted in middle of base; a narrow slightly inwards curved fascia, from costa at one-third to innermargin before middle, preceded by a small dot in middle; two small discal dots obliquely placed, at two-thirds from base; an oblique fine line, from costa at four-fifths to innermargin at four-fifths, angulated outwards at one-third; a row of small dots along termen; cilia ochreous-reddish. Hindwings with termen unevenly rounded; fuscous; cilia as in forewings and with a fuscous subbasal line.

Mackay, Queensland; one specimen in October.

Etiella holozona, n. sp.

Male, 24 mm. Head, palpi, antennæ, and thorax pale ochreous, palpi fuscous tinged beneath. Legs ochreous-whitish. Abdomen greyish-ochreous, anterior segments whitish. Forewings elongate, moderately dilated posteriorly, costa gently arched, termen obliquely rounded; pale ochreous, clearer on dorsal half; a moderate, straight, longitudinal silvery-white streak, from base to termen below apex, edged beneath throughout with a fuscous-ochreous streak, which is deflected downwards at two-thirds towards termen; cilia pale greyish-ochreous, with a whitish basal line. Hindwings with termen rounded; very pale fuscous-whitish; cilia white, with a fuscous subbasal line.

Brisbane, Queensland; one specimen in December.

Heterographis molybdophora, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, and abdomen pale whitish-ochreous, palpi internally whitish, patagia ochreous. Legs silvery-whitish, anterior pair fuscous-tinged. Forewings elongate, posteriorly gradually dilated, costa gently arched, termen obliquely rounded; pale ochreous; a narrow silvery-whitish longitudinal median streak, from base to near termen, edged above by a fine fuscous line throughout, and below by a similar line, which becomes broader and blue-whitish on posterior fourth; a small blackish dot above innermargin at one-third from base, apparently lying on a fine fuscous streak,

which extends along fold throughout; an elongate streak of bluish-white scales along costa from middle to apex; extremities attenuated; a rather broad leaden-metallic line along termen, separated at apex from preceding streak by an oblique streak of fuscous; cilia fuscous, with a blackish basal and white subbasal line. Hindwings with termen rounded; fuscous-whitish, paler on basal half; cilia greyish, with a fuscous subbasal line.

Derby, Western Australia; one specimen in May.

Heterographis proleuca, n. sp.

Female, 20 mm. Head, palpi, antennæ, thorax, and legs dark coppery-fuscous, very suffusedly irrorated with whitish, tarsi black, with whitish rings, abdomen ochreous-grey, with indications of a dorsal series of fuscous marks on anterior segments. Forewings elongate, moderately dilated posteriorly, costa nearly straight, termen obliquely rounded; deep coppery-fuscous, very finely irrorated with whitish throughout; a moderately broad, rather suffused white subcostal streak from near base to near apex, leaving base and extreme costal edge reddish-coppery; a nearly straight fuscous line from beneath costal streak at one-third to innermargin at one-third; a dentate fuscous line from just before apex of white streak to anal angle, nearly straight; followed by a similar line midway between it and termen; a fine fuscous line along termen; cilia deep-coppery-fuscous, suffusedly mixed with whitish. Hindwings with termen rounded; pale greyish, thinly scaled; a fuscous line along termen; cilia grey-whitish, with a fuscous subbasal line.

Mackay, Queensland; one specimen in October.

Mr. Dodd, of Townsville, has recently sent me two specimens.

Homæosoma (?) melanosticta, n. sp.

Female, 22 mm. Head, palpi, thorax, and legs whitish. Antennæ fuscous. Abdomen ochreous. Forewings elongate, very little dilated, costa gently arched, termen obliquely rounded; pale whitish-ochreous, costal half whiter; markings fuscous; a fine streak along costa from base to apex, extremities attenuated, thickest beyond middle; an elongate spot on lower edge of cell; a second similar just below; a small spot beyond end of cell; an oblique series of dots, from costa before apex to innermargin before anal angle; a few blackish dots along termen; cilia ochreous-whitish. Hindwings with termen rounded; light fuscous; a fine line along termen; cilia grey-whitish.

Reminds one of a pale specimen of *Eucarphia tritalis*, Walk., at first sight.

Derby, Western Australia; one specimen in October.

EPIPASCHIANÆ.

Jocara thermoptera, n. sp.

Female, 20 mm. Head, palpi, antennæ, thorax, and legs fuscous, thorax with a large whitish quadrate spot, tibiæ and tarsi obscurely ringed with whitish. Abdomen dark fuscous, yellowish on sides and beneath. Forewings elongate, dilated posteriorly, costa gently arched, termen obliquely rounded; dark fuscous; darkest on basal half; a thrice sinuate oblique whitish line, from costa just beyond middle to innermargin just beyond middle, deeply indented below first sinuation; two small black dots transversely placed in disc beyond middle; a fuscous apical patch; ground color between this and white line light reddish; a small fuscous spot before apical patch; a row of fuscous dots along termen; cilia fleshy-red. Hindwings with termen rounded; bright orange; a moderate black apical patch; cilia orange, with a blackish tooth at apex.

Reminds one of *Titanoceros cataxantha*, Meyr.

Broken Hill, New South Wales; one specimen in March.

Stericta aleuropa, n. sp.

Female, 24 mm. Head, palpi, antennæ, thorax ashy-white, legs white, tibiæ and tarsi more or less banded with fuscous. Abdomen greyish, white beneath. Forewings elongate, narrowly triangular, costa gently arched, termen oblique, hardly rounded; white, finely irrorated with fuscous, so as to appear fuscous whitish; markings fuscous; a small spot on fold close to base; a dentate outwards curved line from costa at one-fourth to innermargin at one-fourth; a short oblique double interrupted line from costa beyond middle, reaching nearly half across wing; a strongly waved submarginal line from costa at three-fourths to innermargin at three-fourths, slightly curved outwards on upper third, thence nearly straight; a dentate subterminal parallel line, straight throughout, becoming thicker above anal angle; interspace white; a row of cloudy spots along termen, obsolete above anal angle; cilia white, with two rows of blackish points. Hindwings with termen rounded; fuscous; basal two-thirds of costa broadly whitish; cilia grey, with a fuscous sub-basal line.

I have seen this species, which is not unlike *concisella*, Walk.

Standing in some collections as *polialis*, Hmp's., but that species is referable to *Orthaga*, and is quite distinct.

Mackay, Queensland; one specimen in January.

ENDOTRICHINÆ.

Endotricha pyrocaustalis, n. sp.

Male, 24 mm. Head, palpi, antennæ, thorax, legs and abdomen orange-fuscous. Forewings elongate, moderate, costa slightly arched towards apex; termen oblique, not rounded; bright orange-ochreous; a pale yellowish strongly outwards curved line, from costa at one-third to near one-fourth of innermargin, space between this and base purplish; a fuscous discal dot; an oblique, slightly waved yellowish line, from costa at three-fourths to innermargin before anal angle; space between this and termen purplish; a row of blackish dots along termen; cilia yellowish, on basal half purplish. Hindwings with termen rounded; color, cilia and markings as in forewings; costal edge broadly yellowish, except apex.

Brisbane, Queensland; one specimen in December.

Endotricha desmotoma, n. sp.

Male, 16 mm. Head, palpi, thorax, and abdomen fuscous-purplish, middle segments of abdomen greyish. Antennæ greyish, legs whitish, fuscous tinged. Forewings elongate, triangular, costa hardly arched, termen obliquely rounded; deep reddish-purple, darkest on basal third; outer edge of basal third edged posteriorly by a broad whitish-ochreous fascia, posteriorly suffused into ground color; a fine white line from costa at five-sixths to anal angle, upper third nearly straight, thence strongly curved inwards, edged obscurely on either side with fuscous; a minute white spot on costa at three-fourths; a row of obscure blackish dots along termen; cilia ochreous, basal half blackish. Hindwings with termen waved; color, fascia and dots along termen as in forewings, but posterior edge of fascia edged by a fine black dentate line; cilia as in forewings.

Derby, Western Australia; one specimen in April.

Persicoptera chionozyga, n. sp.

Female, 16 mm. Head, palpi, antennæ, thorax, legs, and abdomen dark fuscous, somewhat purplish-tinged. Forewings elongate, triangular, costa faintly sinuate, termen obliquely rounded; dark fuscous, purplish-tinged; a straight white streak from costa at one-third to innermargin at one-third, ante-

riorly sharply defined, posteriorly somewhat suffused; a few whitish costal dots in middle; a fine white line from costa at three-fourths to innermargin at three-fourths, moderately curved outwards in middle; space beyond first line suffused with white anteriorly; space between second line and termen also suffused with white; an obscure row of fuscous spots along termen; cilia fuscous. Hindwings with termen rounded; purplish fuscous, becoming greyish on basal third; first line absent; second line, cilia, and dots along termen as in forewings.

Mackay, Queensland; one specimen in March.

TRICHOPHYSETIS CROCOPLAGA, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, and legs white, palpi fuscous at apex, antennæ fuscous beneath. Abdomen ochreous, first segment white, segmental rings whitish. Forewings elongate, moderately dilated posteriorly, costa gently arched, termen rather strongly bowed, oblique, white, with fuscous markings; a thick transverse line close to base; a rather thick double line from one-third costa to one-third innermargin, outer portion darkest; a fine double line from costa at two-thirds to innermargin at two-thirds, somewhat interrupted in middle; a moderate patch of clear orange near apex before termen; a fine line of orange along termen; cilia white, ochreous tinged at base. Hindwings with termen unevenly rounded; color, markings, and cilia as in forewings, but orange patch fuscous tinged.

Cooktown, Queensland; one specimen in January.

TRICHOPHYSETIS FULVIFUSALIS, n. sp.

Female, 18 mm. Head and palpi fuscous. Antennæ ochreous. Thorax and abdomen ochreous-whitish. Legs whitish. Forewings elongate, moderately dilated posteriorly, costa hardly arched, termen rather strongly bowed, oblique; pale ochreous-ferruginous, mixed with whitish; an outwardly oblique ferruginous streak from innermargin at one-sixth to two-thirds across wing; a similar streak, from costa at two-fifths to innermargin at two-fifths, acutely angulated just beneath costa and edged anteriorly throughout with a line of dull whitish; a curved lunate white discal mark beyond middle; a strongly and evenly outwards curved fuscous line, from costa at two-thirds to innermargin at three-fourths, edged posteriorly by a dull whitish line throughout; ground color beyond darker; a fine fuscous line along termen; cilia shining grey. Hindwings with termen rounded; color and cilia as in forewings; a

fine irregularly-waved fuscous line, from costa at one-third to innermargin at two-thirds, edged above by fuscous-ochreous shade; a similar line, slightly outwards curved in middle, from costa in middle to innermargin at four-fifths, closely edged by a posterior fuscous-ochreous shade.

Cooktown, Queensland; one specimen in March.

HYDROCAMPINÆ.

Aulacodes triplaga, n. sp.

Female, 22 mm. Head, thorax, antennæ, legs, and abdomen whitish, anterior tibiæ and tarsi banded with fuscous. Palpi fuscous. Forewings elongate, posteriorly moderately dilated, costa nearly straight, termen strongly oblique; white, with pale yellow, fuscous-margined markings; a moderately thick streak along costa from base to three-fourths, extremities attenuated, emitting from its lower edge at about two-thirds an oblique streak to anal angle; a rather broad streak along termen to anal angle and there joining the oblique streak; an elongate, somewhat sickle-shaped streak on innermargin at one-third, its apex reaching more than one-fourth across wing; a golden-metallic streak before termen, beyond which the ground color is more ochreous; a row of fine black dots along termen; cilia ochreous-white. Hindwings with termen unevenly rounded; white; a narrow fuscous line from beneath costa at two-thirds to before innermargin at three-fourths, indented before termination; wing beyond the line ochreous; four black anteriorly golden-metallic edged spots on middle of termen; a short golden-metallic line beneath apex along termen; cilia as in forewings.

Mackay, Queensland; one specimen in March.

Nymphula diplopa, n. sp.

Female, 12 mm. Head, palpi, antennæ, thorax, legs, and abdomen fuscous-whitish. Forewings elongate, moderate, costa gently arched, termen oblique; pale fuscous; markings fuscous; a small elongate subcostal spot at base; a small spot on base of innermargin; a double spot below costa at one-fourth from base; an ovate spot just below; a roundish spot just beyond middle, nearer to costa than innermargin; and two others placed respectively below, beyond, and before; a fuscous subterminal shade, only obscurely noticeable on upper third; cilia fuscous. Hindwings with termen rounded; fuscous-whitish, more whitish above and below middle; cilia as in forewings.

Broken Hill, New South Wales; one specimen in November.

PYRAUSTINÆ.

Marasmia hexagona, n. sp.

Male, 12 mm. Head, palpi, antennæ, thorax, legs, and abdomen pale brass-yellow, palpi fuscous on sides. Forewings elongate, triangular, costa hardly arched, termen oblique; pale brassy-yellow, with fuscous markings; a fine slightly outwardly curved line from one-fourth costa to one-fourth innermargin; a second from beneath costa in middle, curved outwards at commencement and slightly sinuate beneath, ending on innermargin about middle; a third from costa at three-fourths to innermargin at three-fourths, nearly straight, very slightly angulated in middle; a faint fuscous subterminal shade, curved outwards above middle; a fine line along termen; cilia whitish, with a fuscous subbasal line. Hindwings with termen rounded, faintly sinuate on posterior half; color, lines, and cilia as in forewings; subterminal shade suffused into third line.

Cooktown, Queensland; one specimen in January.

Tyspanodes metachrysialis, n. sp.

Male, 24 mm. Head, palpi, antennæ, thorax, legs, and abdomen pale yellow. Forewings elongate, triangular, costa gently arched, termen rounded, oblique; pale ochreous, basal half of wing mixed with yellowish, veins appearing to be outlined with alternate dark fuscous and whitish line; an obscure fuscous dot at base; a similar one at end of cell; cilia fuscous (imperfect). Hindwings with termen rounded; yellow; a dark fuscous band along termen, very broad at apex, becoming suddenly narrowed in middle and continued as a fine line towards anal angle; cilia yellowish.

Cooktown, Queensland; one specimen in November.

Nacoleia xanthoscota, n. sp.

Female, 20 mm. Head yellowish. Palpi, legs, and abdomen yellow-whitish, anterior tibiæ fuscous tinged. Thorax yellow, with anterior and posterior fuscous spots, patagia spotted with fuscous. Forewings elongate, triangular, costa gently arched, termen rounded, oblique; yellow, with fuscous markings; a moderate streak along costa throughout; four moderately thick waved fasciæ, first from costa at one-sixth direct to innermargin; second from costa at one-third direct to innermargin; third from costa at about two-thirds to middle of wing, thence becoming furcate and ending on innermargin about middle and anal angle respectively; fourth from three-

fourths costa to anal angle, curved outwards on lower half and meeting posterior fork of preceding streak; second, third, and fourth streaks connected along innermargin by a moderate streak; a thick streak along termen, angulated in middle so as to touch fourth streak, abruptly narrowed on lower third and connected with streak along innermargin; cilia fuscous, with a fine yellowish basal line. Hindwings with termen rounded, slightly prominent at apex; color and cilia as in forewings; markings fuscous; second line as in forewings; a moderately thick line from costa at two-thirds to innermargin at two-thirds, strongly sinuate outwards in middle and becoming very much thicker on posterior third; line along termen as in forewings, but not touching previous streak except at termination.

Brisbane, Queensland; one specimen in January.

Lygropia chryselectra, n. sp.

Male, 25 mm. Head, palpi, antennæ, thorax, and abdomen orange-yellow, antennæ fuscous-tinged, abdomen with silvery-whitish segmental rings. Legs whitish, tinged with yellow. Forewings elongate, triangular, costa gently arched, termen rounded, oblique; pale yellow, with rather obscure orange markings; costal edge pale yellow, from one-third to apex, edged beneath with orange; a moderately thick waved orange line from costa before one-third to innermargin direct; a darker orange discal dot; between first line and base is another obscure similar line; a second similar line from just beneath costa at two-thirds, thence strongly curved to touch discal dot and gradually inwards curved to terminate on innermargin at two-thirds; a rather thick subterminal line, narrowest on lower one-third; cilia pale yellow. Hindwings with termen rounded; color, markings, and cilia as in forewings; discal dot absent.

Mackay, Queensland; one specimen in January.

Archernis argocephala, n. sp.

Male, 28 mm. Head snow-white. Palpi fuscous, beneath snow-white. Antennæ, thorax, and abdomen light brownish-ochreous. Legs snow-white, anterior tibiæ and coxæ fuscous tinged. Forewings elongate, triangular, costa moderately arched, termen oblique, slightly rounded; brownish-ochreous; a curved fuscous discal spot in middle of cell; a waved fuscous line, from costa at three-fourths, thence strongly curved outwards, thence sinuate inwards to below discal spot and ending on innermargin at two-thirds; a blackish line along costa, commencing at previous mentioned line, continued to apex, and

thence along termen to anal angle; cilia whitish-fuscous, basal half blackish. Hindwings with termen rounded; color, waved line, discal dot, and cilia as in forewings, cilia somewhat chequered with white on basal half. Underside of hindwings white, markings of upperside reproduced.

Mackay, Queensland; one specimen in February.

The white head and underside of hindwings are reliable points of distinction.

Clupeosoma (?) mimetica, n. sp.

Female, 16 mm. Head, palpi, antennæ (imperfect), thorax, legs, and abdomen pale yellow-whitish. Palpi fuscous on sides. Forewings elongate, moderately dilated posteriorly, costa hardly arched, termen oblique; pale yellowish-white; a coppery streak along basal fourth of costa, posteriorly attenuated; a moderate coppery-metallic fascia along termen, edged anteriorly by a dentate black line, and posteriorly by a pale golden-metallic line; cilia yellowish-grey. Hindwings whitish, thinly scaled; fuscous tinged around termen; cilia grey-whitish.

Derby, Western Australia; one specimen in March.

Noorda molybdis, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, legs, and abdomen, antennal pectinations 4. Forewings elongate, triangular, costa gently arched, termen obliquely rounded; fuscous; a fine blackish obscure line from three-fourths costa to three-fourths innermargin, strongly angulated outwards on lower half; an indistinct fine black curved subterminal line; cilia fuscous. Hindwings with termen rounded; whitish-fuscous; cilia light fuscous.

The type is not in good condition.

Duaringa, Queensland; one specimen in December.

Noorda metalloma, n. sp.

Female, 18 mm. Head, antennæ, thorax, abdomen, and legs yellow. Palpi dark fuscous. Forewings elongate, triangular, costa moderately arched, termen obliquely rounded; yellow; a bluish-metallic streak along costa from base to apex, posteriorly attenuated; five bluish-metallic spots on lower edge of streak, basal three smallest, between base and middle; a broad reddish-coppery-metallic fascia along termen, edged anteriorly by a fine waved, bluish metallic line, and posteriorly along termen by a fine bluish-metallic line; cilia fuscous. Hindwings with termen rounded; color, cilia, and fascia along termen as in forewings.

Very close to *calliphracta*, Turn., and may be only a geographical form.

Derby, Western Australia; one specimen in March.

Criophthona trileuca, n. sp.

Female, 12 mm. Head, antennæ, and thorax fuscous. Palpi and legs white, palpi fuscous on sides. Abdomen greyish. Forewings elongate, triangular, costa hardly arched, termen oblique; pale fuscous; three moderately thick waved dark fuscous transverse fasciæ, first from one-third costa to one-third innermargin; second from beneath costa before two-thirds to innermargin at two-thirds; third from costa at four-fifths to anal angle; a small snow-white spot near base, obscure; a well-defined similar spot on middle of first fascia; a third similar spot on middle of second fascia; a fine dentate line along termen; cilia whitish-fuscous. Hindwings with termen rounded; pale fuscous; a dark fuscous waved line from beneath costa at three-fourths to anal angle; a small fuscous mark on innermargin at two-thirds; line along termen and cilia as in forewings.

Derby, Western Australia; one specimen in November.

Metasia ectodontalis, n. sp.

Female, 16 mm. Head, palpi, antennæ, and thorax fuscous. Legs and abdomen grey-whitish. Forewings elongate, triangular, costa hardly arched, termen obliquely rounded; very dull coppery-fuscous; an obscure short fuscous mark in middle at one-third from base; a fine strongly dentate fuscous line from costa at three-fourths reaching three-fourths across wing towards anal angle, thence sinuate inwards and terminating on innermargin at three-fourths, cilia fuscous, mixed with darker fuscous. Hindwings with termen rounded; pale fuscous, mixed with greyish on basal half; markings as in forewings, but very obscure; cilia whitish, with fuscous bars.

Brisbane, Queensland; one specimen in January.

Metasia phragmatias, n. sp.

Male, 12 mm. Head, thorax, and abdomen pale ochreous, abdomen with fuscous segmental rings. Antennæ fuscous. Palpi and legs whitish, palpi on sides fuscous. Forewings elongate, triangular, costa arched towards base, faintly sinuate in middle, termen obliquely rounded; pale yellow, suffusedly irrorated with fuscous, and with fuscous markings; an irregular mark on base of innermargin; a narrow outwards curved line, from costa at about one-third to innermargin at one-

third; a moderate discal dot; a narrow line from costa at three-fourths to innermargin at two-thirds, moderately straight on upper half, thence gently curved inwards to extremity; a parallel, slightly thicker shade immediately beyond, not reaching costa; a fine waved line along termen; cilia pale yellow, with a fuscous subbasal line. Hindwings with termen rounded; color and cilia as in forewings; a nearly straight fuscous fascia from about middle of costa to middle of innermargin; a thicker dentate shade from apex to anal angle.

Mackay, Queensland; one specimen in November.

Pionea leucura, n. sp.

Female, 20 mm. Head, palpi, antennæ, and thorax light fuscous. Abdomen and legs greyish-ochreous. Forewings elongate, moderate, costa rather strongly arched, termen obliquely rounded; light brownish; a small black outwards curved line near base; an outwardly oblique blackish line from costa at one-fourth to innermargin just before middle, edged on its posterior half by a streak of snow-white, which is curved towards base, but hardly reaches it; a moderately broad snow-white transverse fascia from apex to anal angle, broad on apical portion and narrow below, with a slight sinuation below middle; a moderately broad dull reddish-ferruginous patch along termen, from below apex to anal angle, broadest below; three or four elongate costal streaks of fuscous between three-fourths and apex; a row of small black dots along termen; cilia dull reddish. Hindwings with termen rounded; pale greyish-ochreous, becoming darker on basal two-thirds, limited posteriorly by a faint fuscous waved line; a row of blackish dots along termen; cilia greyish-ochreous.

Brisbane, Queensland; one specimen in December.

Pyrausta epicroca, n. sp.

Male, 22 mm. Head, thorax, antennæ, and abdomen orange-yellow, two anterior segments of abdomen whitish. Palpi ochreous fuscous, whitish beneath. Legs white. Abdomen white beneath. Forewings elongate, triangular; costa hardly arched, termen obliquely rounded; bright orange-yellow; markings dull reddish; costal edge dull reddish-orange; first line nearly straight, from costa at one-third to innermargin at one-third; second from beneath costa at about one-half to innermargin beyond middle, with an acute projection in middle; third from costa at about three-fourths to two-thirds across wing, more or less waved and curved inwards to join second in middle; cilia greyish-fuscous. Hindwings

with termen rounded; pale yellow, paler on basal half; first and third lines faintly indicated; an orange suffused streak along termen; cilia as in forewings.

This insect stands in some collections as *extinctalis*, Chris.

Brisbane, Queensland; one specimen in January.

Pyrausta petrosarca, n. sp.

Female, 30 mm. Head, palpi, antennæ, thorax, legs, and abdomen pale fleshy-ochreous, palpi whitish at base beneath, middle and posterior legs whitish beneath. Forewings elongate, triangular, costa moderately arched, termen oblique, hardly rounded; pale fleshy-ochreous; an obscure, narrow, waved, pale fuscous line, from costa at three-fourths to innermargin in middle; cilia greyish. Hindwings with termen rounded; pale greyish-ochreous, paler on basal half; a faint fuscous median line, not appearing to reach either margin; cilia greyish.

Cooktown, Queensland; one specimen in November.

TORTRICINA.

ATYCHIADÆ.

Atychia mesochrysa, n. sp.

Male and female, 16 mm. Head, palpi, antennæ, thorax, legs, and abdomen blackish, hairs of palpi beneath whitish, abdomen with fine orange segmental rings. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; blackish-fuscous, with some fine obscure bluish-white scales; cilia blackish. Hindwings with termen rounded; blackish fuscous; a moderately broad bright orange fascia, from costa before middle to before middle of innermargin, but hardly reaching it; gently sinuate inwards on lower edge; cilia fuscous, terminal half orange, becoming wholly orange towards anal angle.

Distinct by the orange fascia of hindwings; the haired palpi deviate from the other described species, but I do not consider it calls for generic distinction.

Perth, Western Australia; two specimens, taken in November, received from Mr. S. Angel.

Atychia episcota, n. sp.

Female, 12 mm. Head, palpi, and thorax fuscous, obscurely mixed with dull iridescent whitish, palpi beneath white. Antennæ, legs, and abdomen dark fuscous, coxæ strongly mixed with whitish, abdomen with bluish-white segmental rings.

Forewings elongate, moderate, costa nearly straight, termen obliquely rounded; dark shining fuscous; markings dull bluish-white; an elongate streak from base, above fold; a short outwardly oblique streak from one-third innermargin, reaching half across wing; an irregular patch of scales below costa at two-thirds from base; a row of scales along termen to anal angle, more or less continued along innermargin towards base; cilia fuscous. Hindwings with termen rounded; blackish; a transverse dull blue-whitish fascia from before middle of costa to before middle of innermargin, divided into three spots by dark fuscous marks, more clearly defined below; cilia fuscous, terminal half bluish-white.

Henley Beach, South Australia; one specimen in November.

TORTRICOMORPHA LEIOCHROA, n. sp.

Male, 16 mm. Head, palpi, antennæ, and thorax deep ochreous-fuscous. Abdomen and legs fuscous, anterior coxæ white. Forewings elongate, moderate, slightly dilated posteriorly, costa nearly straight, termen gently rounded; dark ochreous-fuscous; a hardly traceable transverse fuscous discal spot at two-thirds from base; cilia dark fuscous-ochreous. Hindwings with termen rounded; dark fuscous; cilia dark fuscous.

Brisbane, Queensland; one specimen in December.

TORTRICOMORPHA STILBIOTA, n. sp.

Male, 30 mm. Head and thorax deep purplish-fuscous, minutely irrorated with bluish-white scales. Palpi, antennæ, and legs ochreous, terminal joint of palpi fuscous, anterior legs bright ochreous, all tarsi orange, ringed with blackish. Forewings elongate, moderate, costa gently arched, termen oblique; deep purplish-fuscous, minutely irrorated throughout with bluish-white scales; an obscure blackish mark at one-third from base, in middle; an oblique blackish fascia from innermargin at two-thirds to posterior end of cell; a row of blackish marks along termen; cilia dark fuscous. Hindwings with termen rounded; dark smoky-fuscous; cilia greyish; black on basal half.

Duaringa, Queensland; one specimen in January.

TORTRICOMORPHA LICHNEOPA, n. sp.

Male, 16 mm. Head, palpi, and thorax whitish-fuscous, greenish tinged, palpi white beneath with a fuscous ring at apex of second joint. Legs white. Antennæ ochreous. Abdomen fuscous, segmental margins greyish. Forewings rather

short, costa rather strongly arched, termen obliquely rounded; whitish-fuscous, mixed with dull greenish; a rather broad black outwardly oblique fascia from one-third costa to three-fourths across wing; a fine black dentate line, from costa at two-fifths to innermargin at one-third, strongly angulated outwards in middle; a narrow black streak from costa just before three-fourths to halfway across wing, thence continued as a suffused fascia to anal angle; a dentate line along termen; cilia greenish-fuscous. Hindwings with termen rounded; black, thinly scaled; cilia whitish, base blackish.

Cooktown, Queensland; one specimen in December.

TORTRICOMORPHA MONODESMA, n. sp.

Male, 20 mm. Head, palpi, antennæ, and thorax dark ochreous-fuscous. Abdomen fuscous, whitish beneath. Legs whitish, fuscous tinged. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; dark ochreous fuscous; a nearly straight snow-white line from costa at three-fifths to innermargin at two-thirds; cilia fuscous. Hindwings with termen,, sinuate in middle; black; cilia fuscous-whitish.

Mackay, Queensland; one specimen in December.

TINEINA.

XYLORYCTIDÆ.

CRYPTOPHAGA GYPSOMERA, n. sp.

Male, 52 mm. Head, palpi, antennæ, legs, and thorax white, faintly ochreous-tinged, antennal pectinations 4, ochreous. Abdomen fuscous, white beneath, segmental margins white, second segment dull red. Forewings elongate, moderate, hardly dilated posteriorly, costa slightly arched, termen oblique; white, faintly ochreous-tinged, especially along termen; cilia snow-white. Hindwings with termen rounded, faintly sinuate before anal angle; fuscous; costal edge and termen to middle broadly snow-white; cilia as in forewings.

Closely allied to *albicosta*, Lew., but the total absence of markings of forewings are sufficient grounds for separating it from that species. The former species varies, but not to any extraordinary extent.

Bairnsdale, Victoria; one specimen in January.

GELECHIADÆ.

YPSOLOPHUS LYGROPA, n. sp.

Female, 10 mm. Head, palpi, and antennæ dull ochreous-grey, palpi fuscous on sides and beneath. Legs and abdomen

blackish, posterior tibiæ and tarsi grey. Forewings elongate, rather narrow, costa gently arched, termen obliquely rounded; dull ochreous-greenish; costa more or less strigulated throughout with blackish; markings blackish; a dot in middle at one-fourth from base, a second before middle, third beyond, the three forming a longitudinal series and more or less edged with a white dot; a fourth dot below and between second and third; an obscure row of dots along termen and apical fourth of costa; cilia fuscous, with a blackish median line. Hindwings with termen emarginate, apex somewhat produced; blackish; cilia greyish-fuscous.

Wayville, South Australia; one specimen bred from *Eucalyptus sp.* in March.

TINEIDÆ.

Lepidoscia melanogramma, n. sp.

Female, 18 mm. Head ochreous-orange. Thorax, antennæ, and legs dark fuscous, posterior legs ochreous. Abdomen greyish. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 absent; light ochreous-yellow, with blackish markings; a thick basal streak; a moderately straight fascia, from costa before middle to innermargin before middle, constricted above innermargin; a thick subcostal bar uniting basal and first fasciæ, and enclosing a small spot of ground color on costa at one-sixth; a thick fascia from costa at three-fourths to anal angle, strongly curved outwards on lower half, and almost enclosing a small spot of ground color on anterior edge; a small discal spot above middle; a wedge-shaped spot from apex to middle of last fascia, abruptly narrowed on lower half; two small spots on middle of termen; cilia ochreous, with a broad blackish bar at apex. Hindwings thinly scaled; pale fuscous; 6 and 7 almost from a point; cilia ochreous.

Stawell, Victoria; one specimen in July.

Amongst the described species it appears to come nearest *tyroxantha*, Meyr., but differs apart from the different position of markings of the forewings by the light fuscous hindwings.

Xysmatodoma retinochra, n. sp.

Male, 14 mm. Head ochreous, palpi ochreous. Thorax dark fuscous. Antennæ and abdomen grey, legs fuscous, posterior pair greyish. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 absent; pale ochreous, with dull purplish-black markings; a narrow irregular streak along costa to one-sixth, at base extended to inner-

margin, an irregular spot on innermargin at one-fourth, reaching one-third across wing; an outwardly oblique fascia from about one-third costa to four-fifths innermargin, dilated on lower and with a sinuation above middle; a irregular fascia from three-fourths costa to anal angle, tolerably well defined on upper half, more or less broken into spots on lower half; disc between fasciæ finely strigulated on upper half; a moderate patch of strigulæ at apex, more or less reaching anal angle and joining second fascia; cilia pale ochreous. Hindwings thinly scaled; pale fuscous; cilia fuscous.

One specimen from Hobart, Tasmania in September.

Not unlike the following, but differs by the ochreous ground color of forewings.

Xysmatodoma microzona, n. sp.

Male, 16 mm. Head ochreous, palpi, and antennæ fuscous. Thorax dark fuscous, with a whitish anterior spot. Abdomen and legs fuscous, posterior legs greyish-ochreous. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 absent; white, with blackish markings, and irregularly strewn with small blackish spots, hardly forming strigulæ; costa spotted with blackish, one just before and one beyond middle larger, first followed beneath by a similar one; a short thick, hardly oblique streak from costa before three-fourths, reaching nearly half across wing; a narrow somewhat interrupted transverse fascia, from costa before apex to anal angle, most distinct on margin; a suffused spot on innermargin in middle, and indications of a second at one-third; cilia whitish. Hindwings pale fuscous; cilia fuscous-whitish.

Semaphore, South Australia; one specimen in December.

Somewhat allied to *cataphracta*, Meyr., but the absence of complete fasciæ and ochreous head separate it from that species.

Xysmatodoma hemicalyptra, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, abdomen, and legs dark fuscous, antennal ciliations over 1; posterior legs ochreous, abdomen beneath yellowish. Forewings elongate, moderate, costa gently arched, termen very obliquely rounded; 7 absent; dark fuscous, obscurely spotted and strigulated with darker; spots towards apical portion of wings more clearly defined; a row of dark fuscous spots along termen and apical portion of wing; cilia dark fuscous. Hindwings pale yellowish, with suffused blackish band along termen, broadest at apex; base of wing and innermargin fuscous; cilia as in forewings.

Hoyleton, South Australia; one specimen in September.

Not very near any other species known to me.

Xysmatodoma holozona, n. sp.

Male, 18 mm. Head orange. Palpi, antennæ, thorax, and abdomen purplish black, anal tuft orange. Legs dark fuscous, posterior pair dull ochreous. Forewings elongate, moderate, costa hardly arched, termen gently rounded, oblique; 7 absent; ochreous-yellow, with well defined purple blackish markings; a rather broad basal fascia, outer edge slightly oblique inwards; a nearly straight moderately thick fascia, from costa in middle to middle of innermargin, slightly narrower on innermargin; a much broader fascia, from costa at five-sixths to anal angle, much broader on upper half and containing a roundish spot of ground color on costa near anterior edge; a narrow streak along termen, reaching extremity of last fascia; cilia ochreous, fuscous at base. Hindwings bright orange yellow; basal and innermarginal hairs blackish; a fine black line along termen, continued to apex, where it forms a small patch; cilia blackish.

Balaclava, South Australia; one specimen in September.

Allied to *carlotta*, Meyr., but widely distinct.

Iphierga crypsilopha, n. sp.

Male, 12-18 mm. Head and palpi dull orange, palpi slightly tufted. Antennæ and legs greyish-ochreous. Thorax dark fuscous. Abdomen greyish. Forewings elongate, moderate, costa hardly arched, termen strongly rounded; 4 absent; pale greyish-ochreous; markings ill-defined; fuscous; a moderate basal fascia; four moderate spots on costa at one-third, just beyond middle, four-fifths and five-sixths, each indicating commencement of slender fasciæ, of which the first and second only are just traceable, the others appear as fine dots or obscure strigulæ; a moderate spot on innermargin just before anal angle; some obscure fuscous dots along termen; cilia greyish-ochreous. Hindwings pale greyish; cilia greyish, ochreous at base.

Mackay, Queensland; three specimens in November and December.

Closely allied to *pentulias*, Meyr., of which it may prove to be a variety, but the absence of any prominent tuft on the palpi, which is a special character of that species, the greyish-ochreous legs, which in *pentulias* are dark fuscous, and the interrupted fasciæ of forewings seem to favor it being distinct.

The female is probably apterous, as in *Taleporia* (a European genus).

SCARDIA PORPHYREA, n. sp.

Male, 20 mm. Head dull ochreous, spotted with fuscous. Palpi ochreous-fuscous, second joint mixed with fuscous, strongly tufted, terminal joint obtuse, ochreous, with subbasal and subapical blackish rings. Thorax brownish, mixed with ochreous-whitish. Abdomen and antennæ dark fuscous, abdominal segments ochreous. Legs ochreous-fuscous, tibiæ more or less ringed with whitish. Forewings elongate, moderate, costa moderately arched, termen obliquely rounded; 7 to apex, 4 present, 8 and 9 stalked; dark bronzy-fuscous, with numerous closely arranged dark fuscous and whitish dots and strigulæ; a streak along fold and veins towards termen more or less marked with metallic lilac; costa strigulated with alternate ochreous and fuscous spots, at one-fourth and beyond two-thirds the spots are larger and quadrate; an irregularly quadrate spot on innermargin in middle reaching half across wing; a spot on costa before apex, more or less continued to middle of termen; cilia fuscous, somewhat barred with ochreous. Hindwings shining purplish-fuscous; cilia greyish-ochreous, with a fuscous subbasal line.

North Queensland (Cooktown probably); one specimen in April.

Nearest *clonodes*, Meyr., but apart from the structural difference, it may be known by the lilac-metallic streaks, which though obscure are noticeable. The termination of vein 7 at apex may be an accidental deformity confined to the individual under notice.

Further Notes on the Geology of Kangaroo Island.

By Walter Howchin, F.G.S.

[Read April 7, 1903.]

A second visit to Kangaroo Island enables me to offer some remarks on the Geology of the Island supplementary to those read before the Society in July, 1899. The observations now submitted chiefly concern—

(*a*) Further evidences of Pre-Tertiary glacial remains.
(*b*) Brief reference to the older rocks, including the granite of Cape Willoughby and two igneous intrusions.
(*c*) The occurrence of fragments of asphaltum and fossil resin on the south coast.
(*d*) Evidences of occupation of the Island by an aboriginal population.

Pre-Tertiary Glacial Remains.

In my former paper (Trans. and Proc. Roy. Soc., S.A., vol. XXIII., p. 198) the glacial till and associated erratics were described as covering a great part of the north-eastern peninsula of the Island. These remains were traced around Point Marsden and westward to Smith Bay; and inland, skirting both the north and south sides of the Gap Hills, with extension southwards. Further evidences of this extinct ice field have now been observed near Queenscliffe, Point Morrison, Hog Bay, and Antechamber Bay, along the eastern coast line of the Island.

Queenscliffe.—In revisiting this locality I have been able to confirm my first impressions by securing indisputable proofs of the occurrence of the "till" in the neighbourhood, and also of the inferior position which the glacial beds occupy with regard to the Eocene limestone which forms the sea cliffs.

The Eocene beds lie in eroded hollows of the glacial clay. This can be well seen at Beares Point, a little north of the jetty, where the Eocene limestone ends almost abruptly, abutting against the glacial clay which rises from beneath. Following the coast on the north side of the jetty the glacial beds exhibit a very uneven line of junction with the overlying beds, sometimes outcropping about sea level, and at others rising many feet above their level in the cliffs. In one of these swellings of the clay I obtained a very strongly glaciated erratic, a foot in length, which

was firmly set in the clay at a height of about 15 feet above high water mark. The glacial clay is covered, unconformably with a white, rather coarse sand and ironstone, averaging about 20 feet in thickness, and the latter is covered, in an eroded hollow of about 100 yards wide, with a thick basaltic flow, which forms the cappings of the principal heights in the vicinity. The order of succession is, therefore, as follows:—

Basaltic sheet	...	about 100 feet
White sand and ironstone	...	" 20 "
Eocene limestone ...	...	" 15 "
Glacial clay		(depth not proved)

On the south side of the Queenscliffe Jetty the Eocene beds form the sea cliffs for about a mile, showing a very decided dip to the south-east. Near the most southerly outcrop of these beds the rock is characterised chiefly by the remains of Echini, which occur in immense numbers. *Cassidulus longianus* is extremely common. *Echinolampus posterocrassus* and *Eupatagus coranguinum* are also fairly common. At one horizon the rock for about a foot in thickness is exclusively composed of closely packed remains of *Fibularia gregata.* The waste of the sea cliffs has liberated the Echini, which can be picked up in great numbers from amongst the shingle of the beach. A little further south the Eocene beds have disappeared in consequence of a plane of marine denudation having been cut by the sea along the line of parting of the glacial clay and the tertiary limestone. Fragments of the latter, in situ, can be seen as a thin covering on the exposed boulder clay between tide marks.

The coast road going south-west crosses the Cygnet River about two miles from the township. On passing down the hill leading to the flats bordering the Cygnet River, numerous erratics were noticed on cultivated clay land on the eastern side of the road. Several varieties of granite were noticed, some showing the same kind of opalescent quartz which was subsequently recognised as a pretty constant feature of the granite of Cape Willoughby. Other erratics composed of a siliceous quartzite, &c., were also recognised. The largest ice-borne stone observed at this spot measured about two feet in its longer axis.

After leaving the Cygnet Valley no further evidence of glacial deposits were observed in a journey south-westerly, by Hawk's Nest and the Brecknell Sandhills. The country in this direction, with the exception of a low ridge of palæozoic rocks, is thickly covered with recent and pleistocene deposits, which effectually mask the older geological features.

Nepean Bay and Point Morrison.—The occurrence of glacial clay underlying the Eocene beds have already been described at

Queenscliffe and for some distance south of the township along the beach. Near the head of Nepean Bay high clay banks occur, known as the "Red Cliffs." These could be distinctly seen from Queenscliffe, and are probably of glacial origin, but I had not the opportunity of examining them.

Point Morrison forms the bold headland on the eastern side of Nepean Bay. The beach is occupied by rough outcrops of a dark-colored quartzite, somewhat micaceous in places. The beds are either vertical or slightly divergent, exhibiting acute anticlines. Observations were limited to the short interval during which the steamer took in cargo. A granite boulder of small size was found on the beach, and the rich clay soil of the local homestead, owned by Mr. Thomas, indicate the presence of the glacial beds. Mr. Thomas informed me that in Newland Bay, two miles eastward of Point Morrison, some large granite boulders occurred on the beach.

Hog Bay.—The largest patch of good arable land on Kangaroo Island occurs at Hog Bay, and owes its origin to the outcrop of glacial clay. The coast is extremely rocky, and in most cases the rocks face the sea in bold, precipitous, and often inaccessible cliffs. Two small bays near the township afford safe landing places.

Glacial erratics are very numerous around Hog Bay. The smaller ones can still be seen on the ploughed ground, and the larger ones are generally either heaped in the field or drawn aside to the fence. They consist chiefly of granite, gneiss, or quartzite. A granite boulder, measuring three feet six inches by two feet six inches, has been drawn, with others, from Mr. Buick's paddock into the creek on the west side of the cultivated ground.

The agricultural ground between Hog Bay and Kangaroo Head affords many examples. A dark-colored laminated quartzite, too large for removal, was noticed in one field on the east side of the Head. It has split into two fragments, each one being about three feet in length. The soil generally in these fields is of a very stony nature from the number of erratics contained in the clay. Some of the larger blocks have been apparently artificially broken. One of these, a granite split into two large and a number of smaller pieces, must originally have measured five feet by two feet.

A small bay on the east side of Kangaroo Head proved to be specially interesting. Resting on old schistose rocks and a beach of sticky clay were seen a great number of very large erratics. The largest, a great gneissic block, measured six feet long by four and a-half feet broad and four feet high, with another block of the same kind of rock, of almost equal size, close to it, which

no doubt formerly formed one mass with its neighbor. Standing by this great boulder I counted eight other large granite and gneissic boulders on the beach within easy sight. Two boulders, showing a close resemblance to the granite of Cape Willoughby, measured respectively four feet, and four feet nine inches, in their longer axes. This bay is backed by sloping clay banks and cultivated fields. The clay near the coast has been somewhat rearranged by slips and rainwash, but it is very stony, and fair-sized erratics can be seen in the higher cultivated ground.

A few erratics can also be seen by the side of the road in the township of Hog Bay, near the top of the cliffs, but the most striking assemblage of these travelled stones is found within the limits of the small inlet of the sea known as Christmas Cove, or the "boat harbour." Here the glacial clay slopes down to the beach, and within tide marks as well as standing out of the water, below low water line, a very great number of glacial erratics can be seen, ranging from small pebbles up to many tons in weight. Only a few of them can be referred to.

(No. 1.) Near the head of the cove three very large granite blocks lying close together, near high water mark, immediately attract the notice of the visitor. The three pieces have evidently formed one mass, which has split along joint planes and fallen asunder. The measurements of the respective fragments are as under:—

	Feet long.	Feet broad.	Feet high.
(*a*) A long shaft-like mass, prostrate	9	4	2
(*b*) Of pyramidal shape	$4\frac{1}{2}$	3	$3\frac{1}{2}$
(*c*) Roughly pyramidal	$5\frac{3}{4}$	$3\frac{1}{2}$	$3\frac{1}{4}$

(No. 2.) Near this group, but at a lower level, is a large dark-colored siliceous quartzite, quite distinct from the local rocks, which measures 5 feet 9 inches long, 5 feet broad, and 2 feet 9 inches in height.

(No. 3.) On the east side of the cove another boulder of granite attracts the eye by its huge size and very coarsely porphyritic structure. Numerous crystals of orthoclase fully two inches in length occur throughout the mass. It has also suffered fracture along a joint plane. Measurements, 8 feet by 5 feet 6 inches, by 4 feet 6 inches.

(No. 4.) On the west side of the cove a large boulder of granite, finer in texture than the one last described, is left dry on the retreat of the tide. Like most of the granites in the cove, it is of a pinkish color, and measures 6 feet 3 inches by 4 feet 3 inches by 2 feet 6 inches. There are several other examples within the cove which nearly, if not quite, equal the proportions of those described, whilst the stony beach as a whole has gathered most of its material from the glacial clay which forms its banks.

Following the trend of the coast, on the east side of Hog Bay the cultivated land continues to show many erratics, some of considerable size, up to the level of the inland plateau, estimated at about 300 feet above sea level. The larger stones can be seen mostly along the fences or near the waterholes.

Antechamber Bay.—The coast between Hog Bay and Antechamber Bay presents the features of lofty and precipitous cliffs, which rarely give access to the sea, the waves for the most part breaking against the base of the cliffs, with no beach space. Within four miles of Cape Willoughby, however, there is a notable break in the continuity of the cliffs at Antechamber Bay, with sandhills for several miles in extent. Towards the south-east portion of the bay a group of erratics can be seen between tide marks. Seven granite boulders were counted; the largest measured 7 feet by 4 feet 9 inches by 4 feet high, and another 6 feet by 3 feet 6 inches.

The journey between Hog Bay and Cape Willoughby was made by road through dense scrub, which afforded but slight opportunities for making geological observations, more particularly as the surface was generally occupied by comparatively recent deposits of sand and yellowish clay. It is highly probable that the glacial clay underlies some of these superficial deposits, and in places may be so near the surface that deep ploughing might bring it within reach of cultivation.

The observations now submitted cover the coastal districts for thirty miles in direct line between Queenscliffe and the southern end of Antechamber Bay, and shews that the great Pre-Tertiary icefield included the eastern side of Kangaroo Island. The great number of granite and gneissic boulders which occur in the till indicate that the centre of dispersion was in the great granitic region which lies to the south of the continent, and which is now, with the exception of a few isolated headlands and islands, submerged in the Southern Ocean. To produce ice sufficient for the transport of the enormous amount of morainic matter which is spread over many thousands of square miles of land and sea requires that these granitic highlands which formed the snow-fields in Pre-Tertiary times should have been of considerable elevation and extent. Travelling ice must have done much towards the removal of this lost mountain range, but what the ice did not complete has been most effectively done by the sea, which has reduced the former high lands to a submerged continental shelf fringing the southern shores of Australia, and from which Tasmania and other islands still raise their heads above the water line. In tracking the path of the ice agents, by means of their "spoor," back to the south-eastern portions of Kangaroo

Island, we have probably reached the extreme southern limits of our observations in the direction of their source. Beyond this point the sea shrouds the rest in its eternal mysteries.

General Geological Notes

Observations on the geology of Kangaroo Island have been published by the French navigator and explorer, Peron ;* the late Professor Ralph Tate,† Mr. H. Y. L. Brown‡ (Government Geologist), and the present writer.§ Whilst the principal object of my late visit to the Island had reference to the occurrence of glacial evidences, a few general observations were made, and I take the present opportunity of placing them on record.

Archæan or Palæozoic.

On the southern side of the Cygnet River the land rises to a low ridge, which forms the geological axis and watershed of the Island. This elevated land shows an exposure of older Palæozoic rocks, consisting of soft, easily decomposed flaggy quartzites, somewhat rarely interbedded with clay slates. The beds have an E.N.E. and W.S.W. strike, the latter being very persistent in direction, so far as my observations extended on the Island. The older rocks, which form the geological axis of the Mount Lofty Ranges, gradually curve westerly as they approach Cape Jervis, whilst the strike slowly changes from approximately north and south to a direction more nearly east and west. This occidentation of the strike is still further accentuated on Kangaroo Island, the geology of which must be regarded in its main axis as simply a continuation of the ranges which constitute the physiographical backbone of South Australia.

On both sides of this quartzose range, and on its lower slopes, the subsoil is a yellowish clay, usually covered with a few inches of loose sand and small ironstone gravel.

The south side of the Island is included within the highly metamorphic zone which is characteristic of the eastern side of the Mount Lofty Ranges, the rocks of which follow a similar westerly curve as the less altered beds already described. This metamorphic belt takes in the bed rocks of the Murray Plains, the coast line of Port Elliot, Port Victor, and the principal headlands on the south side of Kangaroo Island. It is to the existence of these granite headlands that Kangaroo Island owes its preservation from complete marine denudation. Unfortunately, great thicknesses of recent deposits overlie these plutonic rocks along

---

*Voyage de Découvertes aux Terres Australes.
†Trans Roy. Soc., S.A., v. VI., p 116.
‡Report, Dec. 13, 1898.
§Loc. cit. ante.

the south coast and obscure their outcrops, limiting their study, for the most part, to small, isolated inliers.

The only granitic outcrop that I had the opportunity of visiting was at Cape Willoughby. The Cape is a bold granite foreland at the eastern extremity of Kangaroo Island. Its high cliffs, broken masses, and deep clefts present a scene of rugged grandeur, especially when the storms of the Southern Ocean try their full force on these weather-beaten rocks. The granite consists of pink-colored orthoclase, opalescent quartz, and pockets of biotite. The rock splits up along joint planes, and is everywhere undergoing disintegration by spheroidal exfoliation, producing enormous hemispherical or subglobular masses. Near the extreme point of the Cape a large intrusive mass of fine-grained aplite takes the place of the granite, and exhibits numerous reticulated veins penetrating the granite. The line of junction between the granite and aplitic intrusion is very sharp and well defined, and as the latter has not weathered to such a degree as the granite, the veins stand up as low ridges above the granitic surface. The granite occupies about three miles of coast line, but I had not the opportunity of visiting the points of junction between the granite and the schistose rocks of the district.

Granite boulders were noticed at some distance inland from the Cape, but with the granite outcrops so near it would be a doubtful matter to refer such scattered granite stones in their present position to the agency of ice. The exposed granite surface was carefully examined for ice marks, but its weathered condition and comparatively rapid exfoliation precluded the possibility of such markings having survived so great an interval of time, except where specially protected. I was, however, struck with the rounded and *roche moutonnée* contour of the granite, as it sloped away from the cliffs, and it is quite possible that the larger features of the surface may still retain the outline given to it by the moving ice.

The sea beach, on both sides of the headland, exhibits a wonderful assemblage of large, rounded granite boulders, worn by wave action into spherical or subspherical masses piled on each other, and rendering the beach almost impassable to pedestrians.

At Hog Bay the bed rock is a fine-grained biotite schist, sometimes passing into a more siliceous stone, standing at a high angle of dip which varies from 45° to 80° S.E. The whole of the schistose series gives evidence of the great strain it has undergone in the process of folding, not only in the numerous instances of local contortion, but also by the great number and extent of the quartz veins which run in every direction, and often develop into bunches. The quartz is often tinged with a

ruddy hue or is smoky. These micaceous beds constitute a large proportion of the palæozoic rocks of the Island, and can be followed along the slopes of the surrounding hills and far inland.

In Christmas Cove (Boat Harbour), and following the beach for a considerable distance in a westerly direction, is a very remarkable conglomerate bed. It differs from the most of beds of this character in that the stones, which range upwards in size to ten or twelve inches, being set without arrangement in a matrix of fine deposit. The ground mass is finely micaceous, flakey, and with its included pebbles, greatly sheared. Professor Tate, in the article already referred to, mentions this bed, and states that the included pebbles were angular and subangular. So far as my observation went the pebbles were uniformly rounded and consisted mainly of quartz, quartzites, and granites, many of them fractured or sheared under pressure. On the west side of the township a series of these conglomerate beds occur close together, having an aggregate thickness of about 27 feet. About the centre of the series is a well-defined bed, three to four feet in thickness, which although schistose when split, has the appearance of having been laid down as an unstratified deposit. In some respects it has the appearance of a glacial bed, and presents many points of resemblance to the supposed old palæozoic till bed of the mainland, as it occurs in the metamorphosed area of Barossa, Balhannah, and Inman Valley.

Igneous Dykes.

About the centre of Antechamber Bay the sea cliffs are composed of the locally characteristic dark-colored, fine-grained mica schists, having a strike E.N.E. and W.S.W., dipping southerly, at 80°. Above this rocky cliff Mr. Nathaniel Simpson has his homestead, which is built upon an igneous dyke that runs somewhat irregularly east and west for nearly a mile in length, but is not always apparent at the surface. Although within less than a hundred paces from the sea cliff, the dyke is not seen in the face of the cliff, having evidently died out in this short distance. It has the features of a close-grained diabase (aphanite), but has not received petrological examination. Some of the contact rock (which is normally a fine-grained biotite schist) is converted into amphibole schist, with the structure of "tadpole" rock.

Mr. H. Y. L. Brown (Report, 1898) mentions a dolerite dyke as occurring at Cuttle Fish Bay, which I was unable to visit, but at the homestead of Mr. Tretheway, a little to the north of Cuttle Fish Bay, there is a considerable exposure of an igneous neck or dyke, in the form of a knoll. The rock is very fine grained, carrying gas cavities. The amygdaloids filling these cavities are about the size of pins' heads, or a little larger, and are formed of

some ferruginous mineral which easily decomposes, leaving behind a reddish stain.

Gem Stones.

Whilst at Queenstown, Mr. Cox, of Antechamber Bay, brought over a number of stones for my inspection which he had collected on the Island. Amongst these were a few green and pink (rubellite) varieties of tourmaline, transparent, of good quality and likely to be of value as gems. Some of the specimens shown me contained the precious tourmaline in a granitic matrix. I regretted that my arrangements would not permit my visiting the spot where they had been obtained

Tertiary (Eocene).

A very limited but interesting outlier of Eocene limestone occurs at Cape Willoughby, near the lighthouse, exhibiting a cliff face towards the sea The beds are about 15 to 20 feet in thickness, resting unconformably on the granite. Immense boulders of granite, as well as smaller ones, are included within the Eocene beds, showing that the promontory was under the influence of marine denudation as far back as the Lower Tertiary. These beds are sparingly fossiliferous, and have been greatly leached. The lime thus extracted has been redeposited near its source, forming a surface layer of travertine on much of the ground which forms the landward slopes.

Post-Tertiary and Recent.

On the south side of the watershed in the main portion of the Island, numerous lagoons, varying from fresh to salt, are a marked feature. Murray's Lagoon, situated a little west of Hawk's Nest, is one of the largest of these. It measures three miles by two miles in extent, and has generally been sufficiently fresh to be used for stock, but at the time of my visit it was at its lowest known level, being sufficiently dry to permit us walking into the centre. What appeared from a distance to be a number of large stones lying near the centre of the lake, proved on examination to be masses of tufaceous limestone, a foot or two high. These accretions, which had evidently been formed in the lake waters, consisted largely of brackish water gastropods and the carapaces of entomostraca, cemented together by carbonate of lime and other mineral matter. It is evident that the lagoon has been at one time much larger than its present margins would indicate, as a marly limestone, thickly studded with the lake faunæ, occupies the surrounding rises, including the knoll on which the Hawks Nest Homestead, occupied by Mr. A. J. Florance, is built, at a mile distance from the present edge of the lagoon. Similar fossiliferous marls were

found several feet in thickness at the base of the inner sandhills bordering the coast, where there is at present no evidence whatever of a lagoon area.

Professor Tate, in his Geological Notes on Kangaroo Island, already referred to, says, "In most instances the margin of the inundated ground is fringed by a sheet of calcareous travertine of several inches thick, derived from, and including *Bulinus*. Not always is the mollusk living over the same area, inasmuch as through lapse of time the waters have acquired a too saline property for its existence. The large sheet of water called Murray's Lagoon is in this state; whilst its former extension and comparative freshness of its water are indicated by the considerable area above present water level covered by a white chalky clay teeming with the shells of a species of that freshwater water-snail." The diagnosis of Professor Tate in this particular seems to be at fault, as the remains referred to *Bulinus* are really those of the common brackish water species *Coxiella confusa*, found abundantly in our marine marshes and saline lagoons. In this determination I am supported by Dr. Verco and Mr. Bednall.

The country lying between the watershed and the coast possesses few features of geological interest. A superficial travertine crust, with patches of sand, effectually hides the underlying rocks, the difficulties of travel being very great by reason of a dense scrub, which for the most part is impenetrable. In company with a guide I made for the coast at the Brecknell Sandhills, about nine miles from Hawk's Nest, in a south-west direction, taking advantage of the old whalers track to the beach so far as it could be recognised. The limestone passes under the blown sand bordering the coast, and forms high cliffs on the shore.

The hills of blown sand, which everywhere border the coast, are remarkable for their great extent and height. In the peninsula headed by Cape Gautheaume they have a breadth of nine miles, and at the Brecknell from one to one-and-a-half miles. Over much of this area the sand is constantly shifting, and produces hills of remarkable size and aspect. At the Brecknells one hill was probably not less than 300 feet high, destitute of a single blade of green, a mountain of clean white sand like driven snow. The struggle between living vegetation and wind, in this disputed country, is severe and never ceases, and often leads to curious effects. Tree capped heights are separated from a range and entirely surrounded with deep-cut wind drifts, which are surely undermining the last vestige of vegetation on its island height. Or, in other instances, chemical action has so far consolidated a small patch of sand that it is able to defy the

effects of the wind. The wind works around the hardened crust until it scoops out a conical hill 30 or 50 feet high, as in the case of one very conspicuous height of this kind amongst the Brecknells, known as the "Pyramid." We struck the coast at an unnamed but interesting bay about four miles east of Nobby's Island. The headlands of this bay are bold and extremely rough, especially those on the west side, which rise to a height of 100 feet, and gradually slope towards the point. The headlands are entirely composed of recent or pleistocene deposits. Successive layers of travertine limestone, interbedded with more or less indurated blown sands, are exposed in the face of the cliffs, the weathering of the sand-rock showing very strikingly the lines of oblique lamination arising from its mode of origin.

Near the extremity of the western headland, only accessible at low water, is a natural arch cut out by the sea about 20 feet in height, with an eagle's nest occupying the top near the centre of the arch. Passing under the arch, access was gained to a very secluded cove, in which the structure of these ærial deposits exhibited some remarkable and instructive features. There are few places, if any, in the world where sand dunes occur in such magnitude, or could be more effectively studied, than along the south coast of Kangaroo Island.

The existence of such an enormous amount of sea-worn sand raises the question of its origin. The present limited coast line of Kangaroo Island seems disproportionate and inadequate for the accumulation of such a vast amount of waste material. Many things point to the former existence of a great mountain range to the south of the continent, as already suggested, and which is now represented only by the granitic zone on the southern seaboard, which is to a great extent submerged. The south coast of Kangaroo Island would be on the northern flanks of this lost mountain range, and it is possible that the extensive accumulations of sand along the south coast may be the remains of the waste of what was once the main watershed of the southern portions of South Australia.

The great thickness of the recent and pleistocene beds entirely obscures the palæozoic rocks of the country traversed, but beach pebbles of the softish palæozoic quartzite, already described as outcropping inland, suggests the close proximity of this rock.

A black flint with white coating, very characteristic of the Eocene limestones of the south-east of the State, was picked up on the beach within the bay, which may have been derived from beds of this age not far distant.

Evidences of a raised sea beach were obtained at the Breck, nells, on the south coast, where a white travertine limestone thickly studded with marine shells, occurred in slabs a few feet above high-water mark.

The recent elevation of the land on the eastern side of the Island has materially affected the contour of Antechamber Bay. At the head of the bay Chapman's River marks the site of what was once an arm of the sea or estuary running much further into the land than at present, its former outline being indicated by raised sea beaches, lagoons, marsh, and sandhills.

Asphaltum and Fossil Resins.

The occurrence of a pitch-like substance along the southern shores of Kangaroo Island has attracted attention for many years and awakened hopes of finding mineral oil in the locality that has led at various times to trial bores being sunk. Mr. Tolmer, in his "Reminiscences," says that as far back as about 1844 he found loose fragments of pitch at several points on the south coast, aud 20 years later he was shown the spot where the substance exuded from the rocks. Professor Ralph Tate visited the site of one of these trial bores, and from the enquiries instituted by him, expressed the opinion without any reservation that these carbonaceous products were nothing more than "waifs" of the shore. The Government Geologist, Mr. H. Y. L. Brown, in examining portions of the coast line where the substance had been obtained (South-West River and Hog Bay River) was led to the same conclusion.

Near the close of last year a report was current in Adelaide that the material was found inland, at a considerable elevation above sea level, and could be seen in situ, which awakened fresh interest in the matter, and induced the writer to undertake a journey to the locality to test the value of these new assertions. With regard to the main object of my visit, the results were disappointing, but at the same time I cannot claim that they were absolutely conclusive.

The materials which created the hope of finding mineral oil in the vicinity are of two kinds—

(*a*) A kind of *asphaltum*, usually occurring in more or less flat cakes, up to three or four inches in thickness, or in small broken fragments.

(*b*) *Dark-colored travertine limestone*, brown to black, either as angular fragments, or similarly dark-colored limestone crust. The black coloring of the stone was supposed to arise from the infiltration of bituminous matter.

My observations included the following points :—

1. The asphaltum occurs in blown sand, or on surfaces lately denuded of sand by the wind. On the east side of the bay I picked up a fragment about six inches in diameter and subglobular in form. On the west side of the bay, in a sand cliff about

six feet high facing the sea, a large flat piece of the pitch about 15 inches long was taken from the face of the sand bank about one foot from the bottom.

2. The specimens above mentioned were found on the beach, near high-water mark. A few small fragments were picked up amongst the sandhills, to about a mile from the coast. They showed fresh conchoidal fractures.

3. In no case was the material found either included within a rock or filling the crevices of a rock.

4. In conversation with Mr. Buck, of Point Marsden, who had for many years in earlier life been in the sealing trade, I was told that the old sealers not only were acquainted with its occurrence on the coast, but used it for pitching their boats; that they found it from Flour Cask Bay, on the eastern side of the Island, as well as at other places along the coast towards the west, around the south end of Eyre's Peninsula, and on the adjacent islands, and as far west as Cape Aird in Western Australia. In all instances it was picked up at or about high-water mark.

[A substance precisely similar has been found on the beach near the extreme south-eastern limits of the State.]

5. With respect to the black-colored limestones, the conclusion that they owe their color to the presence of bituminous matter is evidently a false inference. Under analysis these black stones yield only a very slight indication of carbon, but a somewhat strong reaction for iron. Whatever may be the cause of this dark coloring, it is certainly not local, except it be from proximity to the sea. I noticed the occurrence of these black limestones along every part of the coast that I visited, not only along the south coast, but also at Queenscliffe and Cape Willoughby. Where the solid limestone crust was colored black, it always occurred on the elevated and exposed points, never underground, the reverse of what might have been expected had it arisen from bituminous saturation. I did not notice this effect on limestone distant from the sea. My first impression was that these black stones were stained by successive growths of a black lichen which has its habitat on limestones that are situated within reach of the sea spray or strong sea air, and that the vegetable growth kept pace with the travertine growth, successive growths being incorporated in the stone producing a black carbonaceous stain. The analyses referred to point to a mineral rather than a vegetable origin of this curious effect.

In relation to the occurrence of the asphaltum material the following deductions appear to be justified:—

1. It is self-evident that the material has not been formed where found, and must therefore have travelled, more or less, from its original source. This is shown by (*a*) its fragmentary

character; (*b*) sharp, clean fractures; (*c*) its occurrence in loose sand; (*d*) absence of any local geological evidence of rocks of this type.

2. The evidence, so far as it goes, points in the direction that these fragments have been introduced into the locality in comparatively recent times. Recently formed surface limestone and sand rock are extensively developed in the neighborhood, and rise into cliffs one hundred feet high. These rocks in consolidating have caught up into their mass whatever surface material may have been at hand. Had the bituminous matter originated in the locality it seems highly probable that some evidence of its occurrence would have been shown in these recent superficial beds. Although carefully looked for, not a vestige of such could be found. The inference is that the bituminous material has been introduced into the locality subsequently to the formation of these recently consolidated beds, or that it exists locally in very limited quantities.

In conclusion, three explanations may be considered in accounting for this occurrence over so great a length of seaboard.

1. That the bituminous material has been derived from a *natural* bed locally developed. Whilst not impossible such a view we regard as highly improbable. No visible rock in the district is at all likely to produce bituminous material, which can only be derived from the decomposition of organic matter, the existence of which in the local rocks there is not the slightest evidence. If it has a natural and local origin it is almost certainly sub-marine, and most likely of Tertiary age. Beds of this age have been already referred to as outcropping on the Island, but in both the localities mentioned their base is exposed, the one resting on glacial clay, and the other on granite, without the slightest indication of bituminous material. Moreover, had the asphaltum oozed out beneath the sea the material would certainly have become mixed with a good deal of foreign matter, whilst the specimens found are very uniform and pure.

It is worth remarking that in Cuba submarine beds of asphaltum are worked at four different localities. The beds are contained in rocks of Lower Eocene age, and have been mined in water from 80 to 125 feet in depth for the past 25 years. One of these deposits, situated in Cardenas Bay, is of unusual richness, and is described in its appearance as resembling cannel coal with a more brilliant lustre. Whilst the geological evidence is decidedly unfavorable, the peculiar conditions under which mineral oil is sometimes found imposes on us a measure of caution in affirming that it is impossible to occur on our shores as a natural product.

2. The *agency of man.* In the days of wooden vessels pitch was always carried on board as an essential article for repairs, &c., and would no doubt be often lost at sea from various causes, just as stray pieces of coal are washed up at intervals all along the coast; its low specific gravity being favorable to its wide distribution. Its occurrence inland can be explained by the old sealers and whalers carrying it inland to their homes, and from its friable nature dropping small pieces by the way. It may be doubted, however, whether such an explanation satisfies all the facts of the case.

(3) A third explanation may be sought in the fragments being sea borne and far travelled. This supposition gathers weight from the considerations that the material has an odour and pliability which distinguishes it from the commercial article; whilst its wide distribution, including the entire southern sea board of South Australia, is difficult to explain on the grounds either of local origin or loss at sea. So extensive an occurrence requires a distributing agent operating on a grand scale, such as ocean currents. A point of considerable interest in this view of the subject is the association of lumps of fossil resin with the bituminous material, the two classes of substances occurring in the same localities and under the same conditions of distribution. There is a high probability that they have been transported from a common source. The erosion of river banks, or the operation of waves on cliffs, in which these substances are contained, would set them free; and on account of their low specific gravity would be easily floated and carried to great distances when brought within the influence of oceanic currents. The great antarctic outflow towards lower latitudes impinges on the southern shores of Australia, and follows an easterly direction through Bass Strait and southern coast of Tasmania to New Zealand. This precludes the idea that the bituminous and resinous minerals have travelled hence from New Zealand. The trend of the oceanic drift which reaches our southern shores takes in Kerguelen and other islands of the southern sea in its course, and it may be found that these waifs of the sea may have had their origin in these distant islands. In Kerguelen poor seams of coal are known to exist, as well as fossiliferous beds, which the late Professor Ralph Tate determined by their molluscan fauna to be of Tertiary age. These two geological factors give some plausibility to the view that the sea-borne materials may have been derived from such a source. I regret that the resinous samples have not been subjected to such an analysis as might enable us to place them in comparison with similar substances from well-known localities.

Aboriginal Occupation of Kangaroo Island.

Prof. Tate, in his excellent resumé of the early history of the Island, says (*loc. cit.*), "Flinders and Peron have each remarked on the absence of any trace of man's sojourn on the Island." In my brief visit I was fortunate in securing unmistakeable evidences of the former presence of the aboriginal race on Kangaroo Island. These evidences were—

1. The occurrence of stone implements showing human workmanship. Eight hammer stones bearing clear evidence of use were picked up by me near Hawk's Nest. They consist of smooth water-worn pebbles of a close-grained quartzite, such as were commonly used by the natives of the mainland as hammer stones or for chipping into implements. The presence of fresh water near Hawk's Nest would make it a suitable place for the natives to camp at, and as I spent two nights on the ground, I had better facilities for obtaining such objects there than at most places visited.

Amongst the blown sandhills of the coast I also obtained some chipped quartz. The workmanship is rough, but there can be no doubt they were made by human agency.

2. A kitchen-midden on top of headland at the east side of bay at the Brecknells. The cliffs are about thirty feet above sea level, with their upper surface slanting gently to the sea. The surface, which has at one time been covered with blown sand, is now bare to the rock, and is literally covered with broken shells over a distance of fifty yards by twenty yards. A great variety of both univalves and bivalves are represented, particularly the former, and amongst these *Turbo undulatus* and *T. stramineus* are conspicuous.

It is difficult to account for such an assemblage of broken sea shells on any other supposition than a native kitchen-midden. Sea birds sometimes form a larder, and will soar with their prey and allow it to drop from a height on a rock to break it, but the enormous quantity of the material, and the greatly shattered condition of most of the shells can only find adequate explanation by assuming the presence of man.

In the retreating sandhills, cut by wind action, layers of shells could also be seen in section, suggesting the probability that, when frequented by the natives, the sand came nearer to the edge of the cliffs, and that its removal by the wind has concentrated the shelly material as a residuum on the bared surface.

The casual residence of native women taken from the mainland, amongst the early settlers, is not sufficient, I think, to explain the facts adduced; and now that attention has been called to this subject it is probable that further evidence of the occupation of Kangaroo Island by an aboriginal population will be secured.

Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species.

By the Rev. T. Blackburn, B.A.

[Read April 7, 1903.]

XXXII.

CARABIDÆ.

EUCALYPTOCOLA.

The following species seems to be doubtfully referable to this genus. Its structural characters are: tarsi not bilobed; scrobes of mandibles present; postocular prominences of head wanting; mesosternum narrow between the intermediate coxæ; head not transversely impressed across occiput; interstices of elytra glabrous and not punctulate; claws serrate. It stands by virtue of the above characters in *Eucalyptocola*, in Mr. Sloane's tabulation of the *Lebiid* genera (P.L.S., N.S.W., 1898, pp. 493 and 494). It differs, however, from Mr. Sloane's diagnosis of *Eucalyptocola* in having its elytra only feebly striate, and from an insect sent to me by Mr. Sloane as *E.* (*Philophlœus*) *dubia*, Macl., in its prothorax being only narrowly margined so as to resemble the prothorax of *Dromius*. It is much like a *Dromius* in general appearance but differs from that genus not only by its narrow mesosternum but also by its very stout antennæ which are shorter and stouter even than those of *Eucalyptocola dubia*. Its narrowly margined prothorax distinguishes it from *Eucalyptocola* so strongly as to render its right to a place in the genus very doubtful, but if not placed there it must be treated as the type of a new genus and for the present it seems better not to create new *Lebiid* genera in Australia if they can be avoided.

E. marcida, sp. nov. Nitida; nigro-picea, elytris (fascia postmediana lata sinuata et utrinque macula parva basali nigris exceptis) sternorum parte mediana coxis pedibusque testaceis, palpis mandibulis antennis et pronoti margine (hoc anguste) rufo-testaceis; supra lævigata; prothorace sat transverso, postice quam antice parum angustiori, antice leviter emarginato, longitudinaliter canaliculato, lateribus leviter arcuatis prope basin leviter sinuatis anguste marginatis puncturis setiferis 2 impressis, angulis obtusis; elytris

subtiliter striatis, striis subtiliter punctulatis, interstitiis planis vix manifeste (sub lente forti) punctulatis. Long., $1\frac{4}{5}$ l; lat., $\frac{4}{5}$ l.

The coloring of the antennæ in the unique type is not quite uniform, the basal two joints being paler, and the third joint darker, than the rest.

Victoria (Glenelg River).

MORPHNOS.

M. Besti, Sl. I have lately met with this species (recently described by Mr. Sloane) at the mouth of the Glenelg River, in the extreme south-west corner of Victoria. Mr. Sloane appears to have seen it only from the Grampian Mountains (Vict.). It was not rare in deep burrows under large stones and logs quite near the sea, and a good deal of digging was necessary to unearth it.

NOTONOMUS.

N. molestus, Chaud. This species is plentiful under stones and logs about the mouth of the Glenelg River, Victoria. Mr. Sloane seems to have it only from the Grampian Mountains.

DYTISCIDÆ.

ANTIPORUS.

A. (*Hydroporus*) *collaris*, Hope. Referring to my note on this species to the effect that, though (of existing genera) *Antiporus* seems the best for it to stand in, yet I think a distinct genus should be formed for it, but cannot myself form one for want of a satisfactory specimen for examination; Dr. Régimbart writes me that he confirms my opinion, and I judge from his letter that he will shortly propose a new generic name for the insect, of which he appears to possess a good specimen.

GYRINIDÆ.

MACROGYRUS.

M. (*Gyrinus*) *obliquatus*, Aubé. Dr. Régimbart agrees with me that there is not sufficient evidence to justify this species being regarded as Australian.

M. (*Dineutes*) *Gouldi*, Hope. Dr. Régimbart answers my query as to the possible identity of this species (which I have not seen) with *M. paradoxus*, Rég., by telling me that he has *M. Gouldi*, and that it is certainly distinct from *paradoxus*, having its elytra genuinely tridentate behind.

M. fortissimus, Blackb. Dr. Régimbart tells me that judging by my description he has no doubt of this species being identical with that which Guérin described as *Gyrinus striolatus*. I had formed the opinion that *G. striolatus* is not a *Macrogyrus*, and

that therefore my insect could not be identical with it. M. Régimbart, however, is able to state definitely that *G. striolatus* is a *Macrogyrus*, and therefore I am satisfied that the name I have used must be regarded as a synonym.

DINEUTES.

D. rufipes, Fab. Dr. Régimbart thinks I am probably right in believing this to be the same species as *D. australis*, Fab.

PALPICORNES.

CERCYON.

C. nigriceps, Marsh. Among some *Coleoptera* collected by Mr. P. Morris in the neighbourhood of Adelaide, and also among some specimens collected by Mr. Dodd near Townsville (Queensland), I have found a *Cercyon* which I cannot separate from this common European species. No doubt it has been introduced.

STAPHYLINIDÆ.

QUEDIUS.

Q. nelsonensis, sp. nov. Apterus (?); gracilis; sat nitidus; piceus, abdomine cupreo-et cœruleo-iridescenti, antennarum articulis basali et apicalibus 2 palpis pedibus et elytrorum basi (hac late) testaceis vel rufo-testaceis; antennis gracilibus minus elongatis, articulis 3° quam 2us sat longiori, 7°-10° leviter transversis; capite angusto elongato, fere parallelo, quam prothorax multo angustiori, puncturis 3 utrinque prope oculum impresso; oculis sat parvis depressis; prothorace minus transverso, a basi antrorsum fortiter angustato supra puncturis nonnullis prope margines sitis et 2 magnis in disco ante medium sitis impresso; scutello punctulato; elytris brevibus (ad suturam quam prothorax sat brevioribus), sat crebre sat subtiliter punctulatis; abdomine basin versus subtilius sat crebre (hinc retrorsum gradatim minus crebre magis fortiter) punctulatis. Long., $2\frac{1}{5}$l; lat., $\frac{1}{2}$ l.

Only three Australian *Quedii* of the section with the head elongate and narrow have been previously described. From them the present species differs by its very small and short elytra (under which I feel sure there are no wings, but as the type is unique and in extremely good condition I am unwilling to risk damage by investigation). Apart from this character the species is very distinct from its allies by the following (among other) characters:—From *æneus*, Fvl., by its very different color and size, and the very sparse puncturation of the hind part of its abdomen; from *cuprinus*, Fvl., by its very different size and color (e.g. the apical two joints of its antennæ testaceous, its elytra bicolorous) and (if I have rightly identified *cuprinus*) its elytra more finely punctulate and antennæ notably more slender; from

baldiensis, Black.—to which it seems nearest—by its much more slender antennæ non-convex eyes (in *baldiensis* the eyes are not strongly but very evidently convex) and much closer puncturation of the basal part of the elytra.

Victoria (Nelson R. District).

Q. baldiensis, Blackb. (Trans. R.S., S.A., 1891, p 69). I described this species as possibly a variety of *Q. cuprinus*, Fvl. I am now, however, satisfied that it is distinct. The small size and testaceous apical joints of its antennæ in combination are, I think, conclusive in themselves. I have, however, a species before me which agrees well with the description of *Q. cuprinus*, and if it be that insect the puncturation of the elytra of *baldiensis* is very evidently finer than in Fauvel's species.

PHILONTHUS.

P. Glenelgi, sp. nov. Niger, elytris rubris; palporum maxillarium articulo 4° quam 3us sat longiori; antennis modicis (quam *P. sordidi*, Grav., sat tenuioribus); capite sat angusto, quam latiori sat longiori, inter oculos 2-punctulato, minus convexo; prothorace antice vix angustato, quam latiori manifeste longiori, quam caput vix latiori, supra utrinque puncturis 4 dorsalibus (inter has et marginem lateralem puncturis 2) longitudinaliter impresso, secundum margines puncturis nonnullis seriatim impresso; elytris quam prothorax sat latioribus vix longioribus, subtilius concinne minus crebre punctulatis; abdomine fere ut elytra punctulato. Long., 3 l.; lat., ½ l.

From all the previously described Australian *Philonthi* of the section having the dorsal series of punctures on the pronotum consisting of four punctures, except *ornatus*, Blackb., this species differs by its bright red elytra. From *ornatus* it differs by its larger size, uniformly dark legs and antennæ, much longer antennæ, more finely punctured elytra, &c. Disregarding the colour of the elytra it differs from the others of the section in the following characters *inter alia*;—from *longicornis*, Steph., by its much smaller size, prothorax much less narrowed in front, elytra much less closely punctulate; from *discoideus*, Grav., and *ventralis*, Grav., by its much longer antennæ; from *macellus*, Fvl., by its more elongate head; from all by its antennæ and legs entirely black.

Victoria (Glenelg R. district).

SILPHIDÆ.

CHOLEVA.

C. Macleayi, sp. nov. Angusta; postice angustata; rufo-ferruginea, elytris interrupte trans partem medianam et pronoti disco infuscatis; confertim castaneo-pubescens;

capite pronotoque sat subtiliter sat crebre punctulatis; elytris transversim subtiliter crebre punctulato-striatis; antennis elongatis, gracilibus, articulo 8° quam 7us et 9us multo angustiori multo breviori; mesosterno carinato. Long., $1\frac{1}{2}$ l.; lat., $\frac{3}{5}$ l.

The antennæ are manifestly longer than the head and prothorax together. They are a trifle shorter and stouter than those of *C. antipodum*, Blackb. Joint 1 is evidently longer and stouter than 2; 3 scarcely shorter than 1; 4-6 each a little shorter than the one that precedes it; 7 of same length as 6 but evidently stouter; 8 small, its length and width about equal; 9 and 10 about as wide as 7 but slightly shorter; 11 evidently longer than 10. The front tarsi are extremely strongly dilated in the male, the intermediate not at all. In my tabulation of the Australian *Cholevæ* (Tr. R.S., S.A., 1891, p. 89) this species falls beside *C. antipodum*, from which it differs *inter alia* by the transverse sculpture of its elytra.

Victoria.

C. victoriensis, Blackb. Since I described this species I have met with it in Tasmania

C. australis, Er. The Adelaide *Choleva* referred to in Tr. R.S., S.A., 1891, p. 87, as probably this insect seems to have been correctly named, as I have since taken the same species in Tasmania (the original locality).

COLON.

C. melbournense, Blackb. Since I described this species I have taken a *Colon* in Tasmania which does not seem to differ from the type except in its uniform castaneous coloring.

CHOLEVOMORPHA.

Notwithstanding the general resemblance of this genus to, and the really close agreement of most of its characters with, *Choleva*, it nevertheless seems to me to be a very isolated form intermediate between the *Silphides* and the *Anisotomides*. In my diagnosis of the genus I called its tibiæ "spinosæ," and I think this phrase capable of misapprehension. In using it I referred to a row of fine erect spines which run down the external margin of the tibiæ, rising from the pubescence with which those organs are clothed. In reality the tibiæ are very much like those of a *Choleva* and very different from that of an *Anisotoma*.

CHOLEVOMORPHA.

C. Koebelei, sp. nov. Sat late ovalis; sat convexa; subtiliter sublineatim pubescens; nitidus; ferrugineus, antennis apicem versus et elytrorum postice disco infuscatis; antennis gracilibus, clava 5-articulata, articulis 7°—10° piceis, 11° dilu-

tiori, 8° parvo vix transverso, 7° 9° 10° que quam latioribus parum longioribus; prothorace fortiter transverso, antice angustato, supra vix manifeste punctulato; elytris transversim subtiliter punctulato-striatis, stria subsuturali profunde impressa.

Maris tarsis anticis 3-unguiculatis, ungue intermedia brevi triangulari; feminæ tarsis 2-unguiculatis. Long., 1 l.; lat., $\frac{2}{5}$ l. (vix).

This species is clearly congeneric with the extraordinary insect on which I founded the genus *Cholevomorpha*. It is much smaller and very differently colored, but agrees with it in structural characters; having most of the characters (including the exposed metathoracic episterna), as well as the general appearance of *Choleva*, but in combination with hind trochanters quite small and placed as in the *Anisotomides*. Like *C. picta* this species has three claws on the front tarsi of the male, but they are extremely small—one of the external claws much smaller than the other, and the intermediate claw of very different shape appearing as a small triangular projection between the other two.

Queensland (Mr. Koebèle, Cairns).

C. atropos, sp. nov. Fem. Sat late ovalis; sat convexa; subtiliter sublineatim pubescens; nitidula; nigra, antennis (his ad basin testaceis) pedibusque piceo-rufescentibus; antennis modice gracilibus, clava 5-articulata, articulis 8°-10° manifeste transversis, 8° parvo; prothorace fortiter transverso antice angustato, vix manifeste punctulato; elytris transversim sat fortiter punctulato striatis, stria subsuturali profunde impressa. Long., $\frac{4}{5}$ l; lat., $\frac{1}{2}$ l. (vix).

This minute insect is evidently a *Cholevomorpha*, but as my unique specimen is a female I am unable to describe its sexual characters. It differs from the two previously described species *inter alia* in size and coloring, in its more conspicuously clubbed antennæ (some of the joints of which are decidedly transverse) and in the much coarser sculpture of its elytra.

Victoria.

C. (?) *extranea*, sp. nov. Fem. Minus late ovalis; sat convexa; parcius pubescens; sat nitida; picea, antennis pedibus abdomine et elytrorum pleuris plus minusve rufescentibus; antennis modice robustis, apicem versus gradatim magis incrassatis, articulo 8° quam 7us et quam 9us sat minori leviter transverso, articulis ceteris haud vel vix transversis; corpore supra sat æqualiter fortiter vix crebre punctulato; prothorace fortiter transverso, postice leviter (antice fortiter) angustato, stria subsuturali vix perspicua; corpore subtus sat fortiter punctulato. Long., $1\frac{3}{8}$ l.; lat, $\frac{4}{5}$ l.

I have some hesitation in referring this insect to *Cholevomorpha* rather than founding a new genus for it. Unfortunately I have not seen the male. I do not find in the female any good structural character to distinguish it from *C. picta*—though it is very different superficially, but not more so, I think, than are some *Cholevæ* from others. It agrees with *C. picta* in being of decidedly *Cholevid* rather than *Anisotomid* type in general (in respect e.g., of the antennæ, metasternal epimera, style of sculpture), but has hind trochanters of the *Anisotomid* type. Its elytral suture is considerably raised (except near the base) as in the previously described *Cholevomorphæ*, but without the strong subsutural stria that is found in them. It is *inter alia multa* very different from them by the coarse, evenly distributed puncturation of its upper surface which is not in the least seriate. Its antennæ are notably stouter than those of its described congeners, especially the first six joints, in consequence of which the apical five joints form a much less conspicuous club. Its tarsi, too, are distinctly shorter and stouter, and the fine spines on its tibiæ are shorter, less fine, and less erect.

S. Australia; under decaying leaves.

CLAMBUS.

C. tropicus, sp. nov. Minus brevis; postice angustatus; nitidus; supra (exemplo typico observato) glaber; obscure rufus, antennis (clava inclusa) pedibusque (posticis haud observatis) pallide testaceis; elytris postice sparsissime minus subtiliter punctulatis, stria subsuturali nulla. Long., $\frac{1}{2}$ l. (vix).

I have not been able to examine the antennæ and hind legs of this minute insect sufficiently in detail to give a full description of them, as I have only a single specimen. The upper surface is practically glabrous, but under a microscope I find one or two short erect setæ close to the lateral margin of the elytra, which perhaps indicate that the example before me is abraded; a fresh specimen certainly cannot have more than extremely scattered setæ. This species differs from *C. Tasmani*, Blackb., and *C. tierensis*, Blackb., in the absence of a subsutural elytral stria, and from *Simsoni*, Blackb., by the very evidently more sparse puncturation of its elytra.

Queensland; Cairns (Mr. Cowley).

SCAPHIDIIDÆ.

SCAPHISOMA.

This genus seems to be numerously represented in Australia. The species as yet described stand under five names, none of which are connected with descriptions sufficiently detailed to allow of confident identification. The two descriptions of Sir W.

Macleay are of such a kind that they can only be disregarded. Read literally, I have certainly seen no species that they could apply to, one (*S. politum*) being indicated as devoid of puncturation, and the other (*S. punctipenne*) as having the elytra "rather thickly punctured," the size of the latter being given as $\frac{1}{3}$ l., which indicates it as much smaller than any *Scaphisoma* that I have seen. I must pass them by with the expression of a doubt whether they belong to the genus. The other three species were described by Reitter in brief terms, dealing only with the coloring, the form of the subsutural stria, and the general character of the puncturation. In respect of one of these (*S. bifasciatum*) the puncturation is dismissed with the remark "subtilissime punctatum" (applied to the whole insect); another (*S. Gestroi*) is said to have the elytra (apparently the whole elytra) "dense punctata," while the third (*S. Albertisi*) is said to have elytra "dense subtiliter punctata." I have seen no *Scaphisoma* with puncturation which any of the above designations would even approximately characterise; and as, moreover, the coloring of all Reitter's species differs considerably from that of all the species before me, I must conclude that they are all unknown to me.

S. queenslandicum, sp. nov. Late ovale; nitidum; glabrum; nigrum, antennis (his apicem versus infuscatis) palpis pedibus abdomine et pygidii parte postica rufis vel testaceis; capite pronotoque lævibus; elytris antice sparsissime vix perspicue (juxta suturam et ultra medium gradatim magis crebre magis perspicue, prope apicem fere ut *S. agaracini*, Leach) punctulatis, stria subsuturali subtili antice extrorsum versa et sat longe continua; metasterno antice convexo lævi, postice perspicue punctulato, versus apicem foveis 2 sat approximatis leviter impressis, his sulco subtili conjunctis; segmento ventrali basali antice sulco transverso profundo impresso. Long., 1 l.; lat., $\frac{1}{2}$ l.

This species is somewhat closely allied to *S. novicum*, Blackb. It is a little larger, without testaceous coloring in the apical part of the elytra, the subsutural elytral stria much less strong, the front part of the elytra (except close to the suture) not distinctly punctulate, the front part of the metasternum not punctulate, the abdomen bright red. The impressions on the metasternum and basal ventral segment are perhaps sexual.

Queensland; Cairns (Mr. Cowley).

S. perelegans, sp. nov. Late ovale; nitidum; glabrum; nigrum, capite antice prothoracis lateribus (late) margineque antico (anguste) elytris (basi, suturæ parte antica dimidia, fascia submediana angulata, et macula subapicali parva, nigris vel piceis exceptis) pygidio palpis coxis pedibus et in corpore

subtus maculis nonnullis testaceis, antennis (basi testacea excepta) fusco-brunneis; capite prothoraceque sat lævibus; elytris antice sparsim subtiliter (nullo modo obsolete) postice gradatim minus subtiliter vix magis crebre punctulatis, stria subsuturali profunde impressa antice extrorsum vix versa. Long, 1 l.; lat., ½ l.

My unique example of this insect is unfortunately not in condition to render advisable the manipulation that would be required to remove it from the gum in which it is deeply imbedded and clean it sufficiently for an examination of the puncturation of its sterna. Its colour and markings are however so entirely different from those of any previously described Australian *Scaphisoma* that it is very easily recognizable. The puncturation of the front part of its elytra is much more distinct than in either *S. novicum*, Blackb., or *queenslandicum*, Blackb. (it is as strong as in the European *S agaricinum*, Leach).

Victoria.

S. fernshawense, sp. nov. Ovale, modice latum; nitidum; glabrum; brunneo-testaceum, elytris maculis 2 (altera humerali, altera subapicali) nigris sat magnis ornatis, sternis abdomineque (hujus apice excepto) piceis, antennis (basi testacea excepta) obscurioribus; capite prothoraceque sparsim subtiliter (nullo modo obsolete), elytris grosse minus crebre inæqualiter (hic et illic seriatim), punctulatis; horum stria subsuturali profunde impressa fortiter punctulata, antice extrorsum versa et longe arcuatim continua; meta sterno in medio subtiliter (latera versus grosse) punctulato. Long., 1 l.; lat., ½ l. (vix).

Very distinct from all the previously described Australian *Scaphisomata* by the extremely coarse puncturation of its elytra, which is intermingled with somewhat less coarse puncturation and here and there runs in rows, especially near the suture and lateral margins. The subsutural stria in front is continued in a curved row of punctures and merges into a discal row of coarse punctures that runs obliquely backward and almost meets the subsutural stria at the apex of the elytra. There are some rather coarse punctures along the base of the pronotum.

Victoria, Fernshaw.

S. novicum, Blackb. The examination of fairly numerous specimens of *Scaphisoma* that have come under my observation since I described this species has led me to doubt whether the specimen whose characters are set down in my description as those of the male is really conspecific with those on which the rest of the description was founded. I have no evidence of similar sexual characters in any other species, and moreover I

have much doubt whether the immature specimen in which I found the character that I mentioned as those of the male could even with maturity have reached the dark colors described as those of *novicum*. On the whole, therefore, it will be best to consider the authenticity of my statement of the sexual characters of the male of *S. novicum* as needing confirmation.

Tabulation of Species of Scaphisoma.

A. Puncturation of elytra more or less fine, and chiefly in the hind part of the elytra.
  B. Elytra uniformly (unless rufous at apex) black.
    C. Disc of elytra scarcely punctulate in front (abdomen bright red) ... ... *queenslandicum*, Blackb.
    CC. Disc of elytra very distinctly punctulate in front (abdomen obscure) ... *novicum*, Blackb.
  BB. The whole upper surface testaceous with sharply defined black markings ... *perelegans*, Blackb.
AA. Puncturation of elytra extremely coarse and sparse over the whole surface ... *fernshawense*, Blackb.

SCIATROPHES (gen. nov. *Scaphidiidarum*).

Oculi minores, sat convexi, integri; caput antice elongatum angustatum; antennæ 11-articulatæ, graciles, elongatæ, articulis basalibus 2 brevibus incrassatis 3°—6° elongatis subtilibus 7° quam hi manifeste crassiori parum longiori 8° quam 7us sat breviori sat graciliori 9°—11° quam 7us parum longioribus sat crassioribus (clava laxe articulata, modice perspicua); scutellum haud manifestum; elytra postice truncata, abdomen haud tegentia; prosternum ante coxas brevissimum; coxæ anticæ contiguæ, intermediæ inter se modice separatæ, posticæ inter se sat late distantes; metasterni episterna angusta; abdominis segmenta basale elongatum, 2um—4um brevia, 5um elongatum conicum; pedes modici, tarsis sat brevibus 5-articulatis, posticis quam tibiæ dimidium parum longioribus.

The species for which I propose this new generic name is near *Scaphisoma* but cannot be placed there on account of its much shorter tarsi, and much narrower metasternal episterna. Its antennæ, moreover, are of structure somewhat different from those of any *Scaphisoma* known to me. Their club is five-jointed strictly speaking, but its first joint is so slightly enlarged in comparison with the apical three, that to a casual glance it seems to be only three-jointed. The eyes are smaller and more convex than in *Scaphisoma*.

S. latens, sp. nov. Scaphiformis; nitidus; glaber; supra nigro-piceus versus latera apicemque rufescens, pygidio testaceo, corpore subtus rufo-piceo, antennarum basi palpis pedibusque testaceo-rufis; capite pronotoque lævibus; elytris antice

sparsim sat obsolete (postice gradatim magis perspicue, prope apicem nullo modo obsolete) subtiliter punctulatis, stria subsuturali profunde impressa antice extrorsum versa et sat longe continua. Long., $\frac{4}{5}$ l.; lat., $\frac{2}{5}$ l. (vix).

The structural characters have been indicated under the heading of the genus. The facies is much like that of *Scaphisoma* but the body is more narrowed hindward from slightly behind the front of the elytra than in any *Scaphisoma* known to me.

Victoria; Dividing Range. In a fungus deeply imbedded in a hollow log.

HISTERIDÆ.

HOLOLEPTA.

H. australica, Mars. I presume that this is the species referred to by Mr. Lea (P.L S., N.S.W., 1897, p. 585) under the name *H.* "*australis*, Mars." By some oversight the name was printed *australis* in Masters' catalogue, from which apparently Mr. Lea adopted it; but de Marseul does not appear to have described any *Hololepta* under the name *australis*.

TRYPANÆUS.

This genus is attributed to Australia in Masters' Catalogue, a species "*Somerseti*, Mars., Ann. Mus. Gen., 1879, p. 281", being quoted. On reference to the memoir cited I find that on p. 281 there is a *Teretrius Somerseti*, which is unquestionably a *Teretriosoma*, nor can I find any *Trypanæus Somerseti* in the memoir. The genus *Trypanæus*, therefore, appears to have been erroneously attributed to Australia.

PAROMALUS.

I am afraid it is almost impossible to identify with any certainty the four Australian species of this genus described by De Marseul without a comparison of specimens with the actual types. I have received from Mr. Lea examples bearing the names of three of them, and I believe that gentleman has been in correspondence with Mr. Lewis, and has received information from him regarding nomenclature. It is, therefore, likely that the specimens sent me were named by Mr. Lea by comparison with specimens named by Lewis. As, however, they do not agree with De Marseul's descriptions, and two of them are from localities widely separated from those of De Marseul's types (while of the third De Marseul does not seem to have known the habitat exactly), I cannot consider the identification conclusive. I, however, must accept the names provisionally, as there is a possibility that they may have been ascertained definitely by Lewis to agree with the types in spite of divergence from the

descriptions. The following are notes on these named specimens, and on the fourth of De Marseul's species.

P. umbilicatus, Mars. Specimens before me are from W. Australia; the type was from Sydney. The specimens before me differ from description *inter alia* by the extremely well-defined puncturation of their metasternum, which should be "almost invisible." The pygidium is quite differently sculptured, but this is possibly sexual.

P. Victoriæ, Mars. Specimens before me are from N.S. Wales; the type was from Victoria. The specimens differ from description *inter alia* in the puncturation of the elytra being very much finer and closer than is indicated by De Marseul's expression "grosse espacée, et de points oblongs," and in the stria-surrounded area of the pygidium in the female being (not "triangular" but) oval.

P. miliaris, Mars. Specimens before me are from W. Australia, whence I have other examples than those received from Mr. Lea; De Marseul gives merely "N. Hollande" as the habitat. The specimens I have under observation have no unevenness on the pygidium, but this discrepancy may be sexual. Otherwise, however, *inter alia* their elytra are particularly finely and closely punctulate, whereas De Marseul says of the elytra of *miliaris* "couvertes de points forts et assez serrés."

P. honoratus, Mars. This species is very briefly described, but cannot be identical with either of the species (from the same habitat—tropical Queensland) described below, as it is said to have the stria of the head interrupted in front. My specimens and De Marseul's type appear all to be females, as they have the sculpture of the pygidium said to be characteristic of that sex. If so they are very distinct species, as the details of that sculpture are quite different *inter se* in all three.

The following tabulation shows the distinctive characters of the *Paromali* before me. I have retained Mr. Lea's names, with a query—the name in each case being applied to the specimens indicated in the above notes, and very probably not representing the species to which De Marseul gave the names. I have not included *honoratus*, as the description does not furnish the necessary information. It differs from all those tabulated except *miliaris* in the absence of a stria across the front of the epistoma.

A. Metasternum deeply longitudinally concave, in its whole length, on either side ... ... *saucius*, Blackb.
AA. Metasternum with the disc perfectly flat ... *Terræ-reginæ*, Blackb.
AAA. Metasternum evenly convex (or nearly so) in respect of its general surface.
B. Two short adjacent furrows on the metasternum close to its front ... ... *Ludovici*, Blackb.
BB. The metasternum without depressions.

C. The metasternum impunctulate, except at the postero-external corners ... ... *Victoriæ* (? Mars.)
CC. The general surface of the metasternum very distinctly punctulate.
D. The puncturation of the metasternum very sparse ... ... *umbilicatus* (? Mars.)
DD. The puncturation of the metasternum close ... ... *miliaris* (? Mars.)

P. saucius. Fem? Ovalis; minus convexus; sat nitidus; niger, antennis pedibusque ferrugineis; capite crebre subtiliter punctulato, stria antice continua recta instructo; prothorace transverso antice angustato, supra crebre subtilius punctulato, trans marginem apicalem stria subtilissima (hac cum stria laterali vix continua) impresso; elytris sat crebre sat fortiter (antice versus suturam multo magis subtiliter) punctulatis, striis 2 dorsalibus minus perspicuis postice abbreviatis et stria subsuturali apicali brevissima instructis; propygidio pygidioque subtilissime punctulatis, in hoc area transversim ovali stria continua circumcinta (hac area postice fovea profunda impressa); prosterno utrinque striato; mesosterno antice arcuatim emarginato, transversim stria impresso, hac ad fines obtuse angulata et retrorsum continuata; metasterno fere lævi, utrinque late longitudinaliter sulcato, sulco in segmento basali ventrali (hoc distincte sparsim punctulato) continuo; tibiis anticis extus minute 4-dentatis. Long., 1 l.; lat., ½ l.

Very distinct from the other described Australian *Paromali* by the wide sulcus longitudinally impressing either side of the metasternum and continued on the basal ventral segment; also by the characteristic sculpture of its pygidium. I have seen five specimens of this insect which do not seem to differ sexually *inter se.*

N. Queensland (Mr. Koebele).

P. Terræ-reginæ, sp. nov, Fem.? Ovalis; sat latus; sat depressus; nitidus; niger, antennis pedibusque obscure ferrugineis; capite crebre subtiliter punctulato, stria antice continua recta instructo; prothorace transverso antice angustato, supra subtilius sat crebre punctulato, stria submarginali pone caput vix perspicua; elytris sat crebre vix fortiter (antice versus suturam magis subtiliter) punctulatis, striis dorsalibus 2 et stria subsuturali apicali brevissima vix perspicue impressis; propygidio perspicue, pygidio vix perspicue, punctulatis; hoc in medio sulco profundo transverversali (certo adspectu literam M latissimam simulanti) impresso; prosterno inter coxas sat lato, utrinque striata; mesosterno antice arcuatim emarginato, transversim stria impresso, hac ad fines obtuse angulata et retrorsum con-

tinuata; metasterno fere lævi, parte mediana valde insigniter planata; segmento ventrali basali utrinque impresso; tibiis anticis externe 4-dentatis. Long., $\frac{3}{4}$ l.; lat., $\frac{2}{5}$ l. (vix).

This minute species does not differ greatly on its general upper surface from the preceding (*P. saucius*, Blackb.) but is smaller and a little wider and more depressed, with the sculpture a trifle feebler. Its prosternum is evidently wider and its metasternum and pygidium are entirely differently sculptured.

N. Queensland (Mr. Cowley).

TRIBALUS.

This name is printed "TRIBALLUS" in Masters' Catalogue. I have not Erichson's original diagnosis for reference, but I find it called *Tribalus*, Er., by Lacordaire, de Marseul, and Lewis. De Marseul gives a derivation for the word as he spells it which involves a quite different meaning from that of *Triballus*.

SAPRINUS.

The species of this genus that have been recorded as found in Australia (including *Gnathoneus*, which De Marseul regarded as a subgenus of *Saprinus*) appear under 14 names. Of these the following are not sufficiently described for identification:—*ater*, Macl; *australis*, Boisd.; *gayndahensis*, Macl.; and *Mastersi*, Macl. I have an example of *S. ater*, named on the extremely reliable authority of Mr. Masters, which does not seem to differ, except somewhat in color, from Northern Australian specimens that I have no doubt are *S. speciosus*, Er. It is impossible even to guess at the identity of *S. australis*. The description of *S. gayndahensis* does not show any distinction from *S. cyaneus*, Fab. *S. Mastersi* may be a good species; I cannot fit the description to any species before me, but it is too vague for any certainty.

Between *S. cyaneus* and *S. lætus* there seems to be almost inextricable confusion. As far as I can see the earliest use of both names was for the same insect, viz.:—*cyaneus*, Fab. (1775) and *lætus*, Er. (1834). But in the interval Paykull (1811) described a different *Saprinus* under the name *cyaneus*, and Erichson (1834) also described it under the same name. Still later De Marseul (1853) described it under the name *lætus*, Er., and then (1859) stated that he had examined the type of *S. lætus*, Er., and discovered that it was not the insect he had described under that name, but was identical with what he regarded as *cyaneus*, Fab.

This leaves *S. cyaneus*, Payk., without a name, inasmuch as *S. lætus* applied to it by De Marseul was a nom. præocc., being (at the time De Marseul used it) a synonym of *S. cyaneus*, Fab. I propose (below) the name *Australasiæ* for the *Saprinus* de-

scribed by De Marseul under the name *lætus*, Er. (Ann. Soc. Ent., Fr., 1853, p. 388) and subsequently (loc. cit., 1859, p. 444) stated by him not to be Erichson's species

No tabulation has yet been published, I think, of the Australian species of this genus except that of De Marseul in 1853, where the few Australians then known were placed among their congeners from other countries. In furnishing a tabulated statement below of the species known to date I have thought it well to include the whole of the *Saprinini* in one tabulation, as the three genera other than *Saprinus* contain only 5 known Australian species among them.

Tabulation of the Australian Saprinini.

A. Front tibiæ slender and falciform (Saprinodes) — *falcifer*, Lewis.
AA. Front tibiæ of normal form (compressed, not falciform).
B. Head not having a frontal carina.
C. Elytra with a well defined subsutural stria (Saprinus).
D. Prosternum with marginal striæ.
E. Subsutural elytral stria not continuous with fourth dorsal.
F. Fourth dorsal stria not, or but feebly, arched at base towards suture.
G. Mesosternal stria complete across the front of the segment ... — *speciosus*, Mars.
GG. Mesosternal stria non-existent in front ... ... — *viridanus*, Lewis.
FF. Fourth dorsal stria arched at base towards suture.
G. Third dorsal stria not, or but little, shorter than second.
H. Interstices of the dorsal striæ entirely (or for the most part) conspicuously punctulate.
I. These interstices entirely punctulate (lateral punctured area of pronotum continuous or nearly so) ... ... — *cyanellus*, Mars.
II. Interstice between second and third dorsal elytral striæ punctured only near base (lateral punctured area of pronotum strongly abbreviated behind) ... ... — *westraliensis*, Blackb.
HH. Interstices of dorsal elytral striæ punctureless... ... — *tyrrhenus*, Blackb.
GG. Third dorsal stria of elytra very much shorter than second.
H. The fourth dorsal stria shorter than third ... ... — *cyaneus*, Fab.
HH. The fourth dorsal stria very much longer than third ... — *tasmanicus* Mars.
GGG. The four dorsal striæ of elytra all elongate ... ... — *Australasiæ*, Blackb.

EE. Subsutural elytral stria continuous with fourth dorsal ... ... *ripicola*, Mars.
DD. Prosternum devoid of marginal striæ.
E Front tibiæ with five teeth externally ... *irinus*, Mars.
EE. Front tibiæ with only four teeth externally ... ... *viridipennis*, Lewis.
CC. Elytra having no (or scarcely a trace of a) subsutural stria (GNATHONCUS) ... *incisus*, Er.
BB. Head with a frontal carina (HYPOCACCUS) ...
C. External subhumeral stria of elytra wanting.
D. Humeral striá of elytra bifid behind ... *piscarius*, Blackb.
DD. Humeral stria of elytra not bifid behind *sinæ*, Mars.
CC. External subhumeral stria of elytra well defined and deep ... ... *vernulus*, Blackb.

S. tyrrhenus, sp. nov. Nitidus; obscure purpureus, antennis pedibusque obscure brunneis; capite lævi, stria frontali integra; prothorace transverso, supra in disco lævi (latera versus, sed a margine sat procul, fortiter vix crebre punctulato, area punctulata postice fortiter abbreviata), stria marginali integra; elytris pone humeros sat fortiter dilatatis, in parte dimidia (vel etiam plus quam dimidia) postica subtilius vix crebre punctulatis, striis dorsalibus 1—3 elytra media fere attingentibus (4ª ut arcus brevis basalis visa), stria suturali antice abbreviata, humerali ultra medium interrupte extensa, subhumerali brevi basali, interstitiis lævissimis; pygidio modice convexo, subtilius sat crebre æqualiter punctulato; prosterno sat plano, stria marginali integra; mesosterno fortiter transverso, stria integra; sternis (sutura crenulata excepta) lævibus; tibiis anticis extus 5-dentatis, dentibus superioribus 2 parvis (inferioribus 3 magnis acutis). Long., 2 l.; $1\frac{1}{5}$ l.

This small species in the striation of its elytra resembles *S. cyanellus*, Mars., near which would be its place in De Marseul's tabulation referred to above, but from which it differs, *inter alia*, by the extremely nitid and punctureless interstices of its elytra and by the very different armature of its front tibiæ.

N.S. Wales; Tolarno (Miss Carnie).

S. westralıensıs, sp. nov. Nitidus; obscure viridis, antennis pedibusque brunnescentibus; capite obsolete punctulato, stria marginali integra; prothorace transverso, supra in disco lævi (latera versus, sed a margine sat procul, fortiter vix crebre punctulato, area punctulata postice fortiter abbreviata), stria marginali integra; elytris pone humeros rotundato-dilatatis, in parte dimidia (vel potius minus quam dimidia) postica subtilius sat crebre punctulatis, striis dorsalibus 1—2 elytra media attingentibus (3ª paullo breviori, 4ª ut arcus brevis basalis visa), stria suturali antice abbreviata, humerali ultra medium extensa, subhumerali brevi

basali, nterstitiis 1ª 2ª que totis (3 antice) punctulatis; pygidio modice convexo, æqualiter minus subtiliter sat crebre punctulato; prosterno minus convexo, stria marginali fere integra (basin vix attingenti); mesosterno stria marginali integra impresso; sternis sat lævibus; tibiis anticis extus 7-dentatis, dentibus a femore deorsum ad sextum gradatim majoribus (6° nullo modo magno, 7° quam 6ᵘˢ paullo minori). Long., $2\frac{4}{5}$ l.; lat. $1\frac{4}{5}$ l.

This species would fall beside *S. cyanellus*, Mars., in that author's tabulation (cited above). From *S. tyrrhenus*, Blackb. (which is also near *cyanellus*) it differs, *inter alia*, by the armature of its front tibiæ and by the puncturation of its elytral interstices. From *S. cyanellus* it differs, *inter alia*, by its uniform dark-green color, by the interstice between the second and third elytral striæ being punctulate only at the extreme base, and by the lateral punctulate area of the pronotum being a narrow strip separated from the lateral margin by an interval almost of its own width and also widely separated from the basal margin of the segment. In the last named character it agrees with *S. tyrrhenus*. In the typical unique example there are distinct traces of a dorsal stria on the hinder part of each elytron placed so as to appear like an apical continuation of the third stria after a wide interruption.

W. Australia.

S. viridicupreus, Blanch. The description of this species suggests identity with *S. speciosus*, Er.

S. viridipennis, Lewis. I have specimens from Central Australia of a *Saprinus* which seems to differ from *S. viridipennis* only by its very much more strongly punctulate elytra and its smaller size (Long., $2\frac{1}{3}$ l.). As careful comparison reveals no other difference I suspect that the distinction is sexual.

S. Australasiæ, sp. nov. I propose this name for *S. lætus*, Mars. (nec Er.), the synonomy of which will stand, I think, as follows

S. Australasiæ, Blackb.
cyaneus, Payk. (nec Fabr.)
lætus, Mars. (nec Er.)
cyaneus, Er. (nec Fabr.)

S. cyaneus, Fab. The synonomy of this species appears to be
S. cyaneus, Fab, Mars.
lætus, Er.

HYPOCACCUS.

Of this genus (Groupe VI. of *Saprinus* according to De Marseul), not hitherto reported as Australian so far as I know, I have several species before me. One of them agrees fairly well

with De Marseul's description of his *H. (Saprinus) sinæ* (from China), under which name I have received it from Mr. Lea, probably on the authority of Mr. Lewis. The following species seem to be new

H. piscarius, sp. nov. Nitidus; nigricans, parum ænescens, antennis pedibusque brunnescentibus; fronte carinata, sulcis 2 angulatis; prothorace transverso, antice parum angustato, supra antice et latera versus in area lata (hac marginem fere attingenti)—postice angusta—sat fortiter minus crebre punctulato, stria marginali integra; elytris in partibus duabus posterioribus (lateribus exceptis) sat fortiter vix crebre punctulatis, striis validis, 1—4 dorsalibus ad medium abbreviatis inter se sat æqualibus, 4ª ad basin arcuatim cum suturali integra coeunti, subhumerali externa nulla interna sat late disjuncta, humerali postice bifida; pygidio minus crebre punctulato; prosterno antice spatuliformi, striis approximatis parallelis fere integris; mesosterno marginato, lævi; tibiis anticis extus 6-dentatis. Long., $1\frac{1}{5}$—$1\frac{4}{5}$ l.; lat., $\frac{4}{5}$—$1\frac{1}{10}$ l.

Resembling the species referred to above as *H. sinæ*, Mars., but less brassy, of wider build, with the elytra more dilated behind the shoulders, the punctures about the sides of the pronotum larger and less close, as also those of the elytra and pygidium, the humeral stria of the elytra bifid behind. It is found under dead fish.

Australia; near Adelaide. Also from Victoria (Frankston, Mr. Kershaw).

S. vernulus, sp. nov. Nitidus; nigricans, obscure viridescens, antennis pedibusque piceis; fronte carinata, sulcis 2 angulatis; prothorace transverso, antice parum angustato, supra antice et latera versus in area lata (hac marginem fere attingenti)—postice anguste—fortiter sat crebre punctulato, stria marginali integra; elytris ab apice ultra medium (lateribus exceptis) subfortiter sat crebre punctulatis, striis validis 1—4 dorsalibus paullo ultra mediam abbreviatis inter se sat æqualibus, 4ª ad basin arcuatim cum suturali integra coeunti, subhumerali externa profunda brevi basali interna vix disjuncta (inter humeralem et marginem sulco brevi profundo), humerali modica; pygidio æqualiter crebre punctulato; prosterno striis approximatis parallelis fere integris impresso; mesosterno marginato, lævi; tibiis anticis extus 6-dentatis. Long., 2 l. (vix); lat.. $1\frac{3}{10}$ l.

Its distinctly green colour in combination with elytra having a very strong external subhumeral stria renders this species very distinct from the other Australian *Hypocacci* before me. The

short deep sulcus close to the hind end of the humeral elytral stria (between it and the lateral margin) is an unusual character. The puncturation of the elytra and pronotum is a little stronger and less close than in the species referred to above as *S. sinæ*, Mars., but that of the pygidium does not differ much from that species. The front of the prosternum is spatuliform as in the preceding species and other *Hypocacci*, but the sides being more strongly declivous this spatuliform shape is less conspicuous.

N.S. Wales; near Sydney. (Mr. Masters; his No. 99.)

TERETRIUS.

T. Doddi, sp. nov. Cylindricus, sat latus; sat nitidus; piceus, latera versus nonnihil rufescens, antennarum clava testacea, tibiis tarsisque plus minusve rufescentibus; capite subtilius sat crebre punctulato; prothorace transverso, supra inequaliter (ab apice retrorsum gradatim minus subtiliter) punctulato, stria integra impresso, lateribus antice sinuatis; elytris sat crebre subfortiter (in parte postico-extero minus perspicue) punctulatis, haud striatis; prosterno subplano, crebre subfortiter punctulato, postice triangulariter emarginato, striis bene definitis vix ultra medium continuis; mesosterno marginato (basi excepta), sat fortiter minus crebre punctulato, antice triangulariter producto; metasterno utrinque stria recta (hac vix ultra medium continua) impresso, sparsim subtilius (ad latera sat fortiter) punctulato; pygidio subtiliter sat crebre punctulato; tibiis anticis 5 denticulis (e his basali valde minuto), intermediis 6 (e his basali valde minuto, 2°—4° inter se propinquis, 5° 6° que prope apicem positis), posticis 5 (e his basalibus 3 valde minutis) armatis. Long., 1 l.; lat., $\frac{1}{2}$ l. (vix).

The only previously described Australian *Teretrius* with 5-denticulate front tibiæ is *T. australis*, Lewis, of which I have an example sent to me by Mr. Lea (it was sent as *T. basalis*, Lewis, but is clearly not that species, as *inter alia* it has 5-denticulate front tibiæ and the mesosternum obtuse in front). The present species differs from it *inter alia* by its mesosternum quite sharply triangular in front and its elytra very considerably more strongly punctulate.

Queensland (Mr. Dodd).

TERETRIOSOMA.

Of this genus two Australian species (*melburnius*, Mars., and *Somerseti*, Mars.) have been described. They were attributed to *Teretrius* by their author. They are readily distinguishable according to their author (though closely allied) by *inter alia* the front tibiæ of the former having 7 denticles and those of the latter only 5. The former is a common species in Southern

Australia,—the latter (from the far North of tropical Australia) I have not seen. I am somewhat puzzled by a remark Mr. Lewis makes—Ann. Nat. Hist. (6), IX., p. 353—to the effect that *Teretrius Walkeri*, Lewis, was found in Tasmania in company with *Teretriosoma Somerseti*, Mars., and am somewhat inclined to wonder whether he accidentally wrote "*Somerseti*" when he intended "*melburnius*." I have examples of a *Teretriosoma* taken by Mr. Walker in Tasmania and ticketed "*Somerseti*," which are certainly not that species (at least they do not agree with de Marseul's description) for they have seven teeth on their front tibiæ, and I have myself met with the same insect in Tasmania. They are very close to *T. melburnius*, Mars., but a certainly distinct species; I describe it below.

I may here remark that I cannot find in the Australian *Teretriosomata* the sexual antennal characters which Lewis alludes to as present in American members of the genus; the sexes, however, are easily distinguished by the sculpture of their pygidium. In one sex (which I take to be the female) the surface of that segment is uneven (variously according to the species), in the other it is without inequalities.

I should add that I have no ground for attributing these species to *Teretriosoma* except Lewis' use of the name for *T. Somerseti* and de Marseul's statement that it and *T. melburnius* are very closely allied; but they are certainly very distinct from *Teretrius*. I have not seen Horn's diagnosis of *Teretriosoma*.

T. gradile, sp. nov. Subcylindricum, modice latum; glabrum; nigro-piceum, latera versus vix rufescens, corpore subtus dilutiori, antennis (harum clava testacea) pedibusque obscure rufis; capite pronotoque subtilius sat crebre (fere ut *T. Melburnii*, Mars.) punctulatis; elytris haud striatis, apicem et latera versus sat dense minus subtiliter (versus scutellum gradatim minus dense magis subtiliter, prope scutellum subtilissime sparsissime) punctulatis; pygidio sat crebre sat fortiter (apicem versus nonnihil rugulose) punctulato; prosterno sat fortiter vix crebre punctulato, haud striato; tibiis anticis denticulis 7, posterioribus 6, armatis. Long., $1\frac{1}{5}$ l.; lat, $\frac{7}{10}$ l.

This species is very close to *T. Melburnius*, Mars.,—in fact I do not observe any well-defined difference except in the puncturation of the elytra, which however is extremely well marked. My unique example is of the sex which has the pygidium even; I have little doubt that the inæqualities on that segment in the other sex are different from the corresponding inæqualities in *melburnius*. The gradual fading away of the puncturation on the elytra from the apex and sides towards the scutellum is very

peculiar; the space round the scutellum is almost punctureless and strongly nitid. The scutellum itself is scarcely visible. The upper three spinules on the hind tibiæ are very small.

Victoria.

T. sorellense, sp. nov. Subcylindricum, minus latum; sat nitidum; piceo-nigrum, corpore subtus dilutiori, pronoti angulis anticis antennis pedibusque rufis; supra sat crebre sat æqualiter punctulatum; prothorace ad latera leviter sat æqualiter arcuato supra stria integra impresso; scutello haud perspicuo, elytris haud striatis; prosterno convexo sat fortiter sat dense punctulato, postice triangulariter emarginato, haud striato; mesosterno marginato, antice producto-triangulo, fortiter nec dense punctulato; metasterno stria arcuata (hac semicirculum coxam intermediam cingentem formanti) impresso, in parte mediana sparsim subtilius (ad latera magis fortiter) punctulato; tibiis anticis 8- (e his denticulis apicalibus 2 fere conjunctis), intermediis 6 (e his basali valde minuto), posticis 6- (e his basalibus 3 valde minutis) denticulatis.

Maris (?) pygidio æquali, apicem versus minus late ruguloso; feminæ (?) pygidio apicem versus late ruguloso et hic late vix profunde concavo. Long., $1\frac{1}{10}$ l.; lat., $\frac{1}{2}$ l.

Another close ally of *T. melburnius*, Murs. It is distinctly of narrower and slighter form than that insect, but I cannot specify any other well defined difference apart from the sexual characters in the pygidium of one sex. In *melburnius* the inequality on that segment is caused by the apical one third of the surface being on a different plane from that of the basal portion, —a slightly lower plane,—and the transition from the one plane to the other being sudden there is a perfectly distinct (though not sharply marked except in the middle) transverse line of demarcation, which is more or less angular (the angle pointing hindward) in the middle; the portion on the lower plane is strongly rugulose. In *sorellense* the same sex has practically *no* line of demarcation between the smooth and rugulose puncturation of the pygidium but the rugulosely punctured surface is widely and very distinctly (though scarcely deeply) concave down its middle, the concavity being non-existent in *melburnius*.

Tasmania; Lake Sorell, &c.

PHALACRIDÆ.

LITOCRUS.

L. maritimus, sp. nov. Ovalis; nitidus; niger vel nigro-piceus, corpore subtus capite antice antennis palpis pedibusque rufo-testaceis; capite pronotoque sublævibus; hujus stria laterali ad apicem continua hinc intus breviter directa; antennarum

articulo 8° parvo transverso; elytris fere lævibus, stria subsuturali (prope basin excepta) bene determinata, stria 2ª quoque bene determinata, a subsuturali antice late divisa postice contigua (cum hac paullo ante apicem profundiori); tarsorum posticorum articulo basali 2° 3° que conjunctis vix breviori. Long., 1 l.; lat., ½ l.

A very distinct species, differing from all its described congeners, except *frigidus*, Blackb, by the presence of a second stria on the elytra similar to the subsutural stria. In the other species having more striæ than the subsutural one the striæ are numerous. The present species differs from *frigidus* in its coloring and in the absence of elytral puncturation. In the tabulation of *Litocrus* (Tr. R.S, S.A., 1902, p. 294) *L. maritimus* must be placed beside *frigidus*.

Victoria; on flowers at the mouth of the Glenelg River.

NITIDULIDÆ.

HAPTONCURA.

There are a great number of species of small *Nitidulidæ* allied to *Epuræa* occurring in Australia, many of which are now before me. I have tried to distribute them among the genera which Reitter distinguished from *Epuræa* but without success, as few of them fit any of his diagnoses quite satisfactorily and some of those which are the closest *inter se* incline more or less markedly to fall into different ones of his genera. I have therefore placed them all provisionally in *Haptoncura*,—which cannot be far wrong for any of them and seems to be certainly right for some.

Of the species which I have previously attributed to *Haptoncura* I think *victoriensis* should be transferred to *Epuræa*, and I should suppose (from the description) *E. Simsoni*, Grouvelle to be extremely close to it; I presume, however, that it is distinct as I sent *victoriensis* to M. Grouvelle previously to the time when he described *E. Simsoni*.

No other of the species I have previously described, and none of those described below, can be, I think, referred to *Epuræa*. Some of them probably resemble in many respects *E. tasmanica*, Grouv., but I judge from the description of that insect that the lateral margins of its prothorax are not reflexed, which is not the case with any of the species I am now describing.

Three species of *Haptoncura* have been described from Australia by Reitter,—none of which have I seen to my knowledge. *H. imperialis*, Reitter should be unmistakeable on account of the bright sharply defined markings of its upper surface, and the other two (from the extreme North of Queensland,—a locality from which I have not seen any *Haptoncura* except *ocularis*,

Fairm.) are both said to be "*confertim punctulatæ*" which is not the case with any of the species described below.

I have been careful to refer the following descriptions to such of the characters of the species dealt with as seem to be of possibly generic value. The sculpture of the upper surface seems to fall into several rather distinct types and may be of importance,—the surface of some being very conspicuously coriaceous and in others with scarcely any indication of that peculiarity, and again in some of the species before me (*H. nelsonensis*, Blackb., *lindensis*, Blackb., *eyrensis*, Blackb., and *uniformis*, Blackb.) the puncturation of the elytra is decidedly of squamose appearance,—so that it is little visible when looked at with the head of the specimen towards the observer, but very distinct when the position of the specimen is reversed. In the other species the distinctness of the elytral punctures is not affected by the position from which it is looked at.

H. brightensis, sp. nov. Minus lata; obscure brunneo-testacea; subpubescens; capite coriaceo distincte sat crebre punctulato; prothorace quam longiori ut 3 ad 2 latiori, antice sat fortiter (ad basin ipsam parum manifeste) angustato, supra coriaceo ut caput punctulato, lateribus anguste reflexo-marginatis leviter arcuatis, angulis omnibus obtusis; scutello fere ut pronotum punctulato; elytris quam prothorax paullo latioribus et circiter duplo longioribus, coriaceis, subtilius sat sparsim punctulatis, lateribus parum arcuatis, ad apicem truncatis; metasterno postice in medio late angulatim emarginato. Long., 1 l.; lat., $\frac{1}{2}$ l.

The upper surface is indistinctly marked with some scarcely symmetrical infuscation, which is on the disc of the pronotum and (in the form of two discal blotches placed longitudinally) on each elytron; the infuscation is unnoticeable from some points of view. The labrum does not cover the mandibles,—which is inconsistent with the characters Reitter attributes to *Haptoncura*.

Victoria; mountains near Bright.

H. Sloanei, sp. nov. Lata; obscure brunneo-testacea, antennarum clava sat infuscata; subpubescens; capite subplanato coriaceo subtiliter sat sparsim punctulato; prothorace quam longiori duplo latiori, antice sat fortiter postice vix manifeste angustato, supra coriaceo et distincte sat crebre punctulato, lateribus anguste reflexo-marginatis leviter arcuatis, angulis omnibus obtusis; scutello punctulato; elytris quam prothorax vix latioribus minus quam duplo longioribus, coriaceis, minus subtiliter minus sparsim (circa scutellum fere crebre) postice subobsolete punctulatis, lateribus parum arcuatis, ad apicem truncatis; metasterno postice in medio late angulatim emarginato. Long., $\frac{9}{10}$ l.; lat., $\frac{1}{2}$ l.

Of very manifestly shorter and wider build than the preceding (*H. brightensis*) and also differing from it *inter alia* by its prothorax considerably more transverse, its head more finely and sparsely punctulate and its elytra more strongly and closely punctulate, especially in the scutellar region where the punctures are almost *crowded*. In this species the labrum covers the mandibles but I cannot attribute great importance to the character as it seems to me to depend to some extent at least on the attitude of the mandibles at the time when the specimen died. Certainly I could not separate these two generically. The upper surface of this species has some vague infuscation not unlike that of the preceding.

N.S. Wales; from Mr. T. G. Sloane.

H. nelsonensis, sp. nov. Modice lata; brunneo-testacea, abdominis segmentis intermediis infuscatis; sat pubescens; capite subtiliter vix crebre punctulato; prothorace quam longiori ut 12 ad 7 latiori, antice sat fortiter postice vix manifeste angustato, supra coriaceo et crebre (nec ullo modo confluenter) minus subtiliter punctulato, lateribus anguste reflexo-marginatis leviter arcuatis, angulis omnibus obtusis; scutello fere ut pronotum (sed paullo subtilius) sculpturato; elytris quam prothorax parum latioribus vix duplo longioribus, coriaceis, sat crebre leviter subsquamose punctulatis, lateribus parum arcuatis, ad apicem truncatis; metasterno postice in medio late angulatim emarginato. Long., 1 l.; lat., ½ l.

The elytral puncturation of this species differs from that of the preceding two species in being much less sharply defined (as in *lindensis*, Blackb., *Meyricki*, Blackb, *Victoriensis*, Blackb., and *ocularis*, Fairm.). It differs from that of the last named two in the derm on which this puncturation is placed being very distinctly coriaceous, and from that of *lindensis* in its being much closer. It is more like that of *Meyricki*, but that species differs from the present one in respect of other characters,—e.g. in the puncturation of its pronotum being confluent. Such infuscation of the elytra as is present consists of a vague triangular common blotch in the scutellar region and an ante-apical cloud.

Victoria; on flowers near Nelson.

H. sparsior, sp. nov. Modice lata; obscure brunneo-testacea, antennarum clava et meso-meta-que sternis nigricantibus; subpubescens; capite coriaceo subtiliter sat sparsim punctulato; prothorace quam longiori fere duplo latiori, antice sat fortiter postice vix manifeste angustato, supra coriaceo et sparsim minus subtiliter punctulato, lateribus anguste reflexo-marginatis leviter arcuatis, angulis omnibus obtusis; scutello coriaceo sparsissime punctulato; elytris quam pro

thorax vix latioribus vix duplo longioribus, coriaceis, sat sparsim (prope scutellum paullo minus sparsim) minus subtilius punctulatis, lateribus parum arcuatis, ad apicem truncatis; metasterno postice in medio late angulatim emarginato. Long., 1 l.; lat., ½ l. (vix).

In my unique example of this species the mandibles are entirely covered by the labrum. Rather close to *H. Sloanei*, Blackb., but differing from it *inter alia* by the black club of its antennæ, the nearly black color of its meso- and meta-sterna (in strong contrast to the testaceous prosternum and abdomen), its evidently less transverse prothorax, and its much less closely punctured pronotum (the punctures of which even close to the front margin are separated *inter se* by more than the length of the diameter of individual punctures. There is a little vague infuscation on the elytra in the scutellar region and behind the middle, also forming a wide margin on the scutellum itself.

N.S. Wales.

H. darwinensis, sp. nov. Minus lata; obscure brunneo-testacea, meso- et meta-sternis nigricantibus; subpubescens; capite coriaceo subtiliter sat sparsim punctulato; prothorace quam longiori fere duplo latiori, antice sat fortiter postice vix manifeste angustato, supra coriaceo et sparsim (in medio disco sparsissime) subtiliter punctulato, lateribus angustissime reflexo-marginatis leviter arcuatis, angulis omnibus obtusis; scutello coriaceo sparsim punctulato, elytris quam prothorax vix latioribus circiter duplo longioribus, coriaceis, sat sparsim (prope scutellum paullo minus sparsim) sat subtiliter punctulatis, lateribus parum arcuatis, ad apicem truncatis; metasterno postice in medio late angulatim emarginato. Long., ⅘ l.; lat., ⅔ l. (vix).

This species is certainly very close to the preceding (*H. sparsior*) but I cannot regard them as identical. *H. darwinensis* is very evidently smaller than *sparsior*, of less wide build, its antennal club testaceous, its prothorax a trifle more transverse and with a narrower reflexed margin, its pronotum evidently more finely and sparsely (on the middle of the disc *extremely* finely and sparsely) punctured. It differs from *Sloanei*, Blackb., by the same characters that distinguish *sparsior* (except the colour of the antennal club). The infuscation of the upper surface is much as in *sparsior*.

Tropical Australia (Port Darwin).

H. eyrensis, sp. nov. Modice lata; brunneo-testacea; sub-pubescens; sub-nitida; vix coriacea; capite crebre punctulato; prothorace quam longiori fere duplo latiori, antice sat fortiter postice haud angustato, supra sat crebre (præsertim antice)

subtiliter punctulato, lateribus angustissime reflexo-marginatis leviter arcuatis, angulis omnibus obtusis; scutello crebrius punctulato; elytris quam prothorax vix latioribus vix duplo longioribus, ad apicem truncatis, sat crebre subtilius squamoso-punctulatis, lateribus parum arcuatis; metasterno postice fere truncato, vix (nullo modo angulatim) emarginato. Long., 1 l. (vix.); lat., $\frac{2}{5}$ l.

This species differs from all the preceding in its metasternum not being angularly emarginate behind. In this character it agrees with *H. uniformis*, Blackb. from which it differs *inter alia* in its much lighter colour and much more closely punctulate head.

S. Australia (Eyre's Peninsula).

Tabulation of the Australian Species of Haptoncura known to the writer.

A. Elytra with sharply defined black and yellow markings ... ... *ocularis*, Fairm.
AA. Elytra not having sharply defined markings.
B. Pronotum confluently punctulate ... ... *Meyricki*, Blackb.
BB. Puncturation of pronotum not confluent.
C. Hind margin of metasternum angularly emarginate in the middle.
D. Pronotum closely punctulate.
E. Puncturation of elytra not squamose.
F. Elytra sparsely punctulate ... *brightensis*, Blackb.
FF. Elytra much more closely punctulate ... ... *Sloanei*, Blackb.
EE. Puncturation of elytra squamose.
F. Sides of pronotum distinctly reflexed ... ... *nelsonensis*, Blackb.
FF. Sides of pronotum not reflexed ... *lindensis*, Blackb.
DD. Pronotum sparsely punctulate.
E. Antennal club black ... ... *sparsior*, Blackb.
EE. Antennal club testaceous ... ... *darwinensis*, Blackb.
CC. Hind margin of metasternum very wide and nearly straight.
D. Head sparsely punctulate ... ... *uniformis*, Blackb.
DD. Head closely punctulate ... ... *eyrensis*, Blackb.

CRYPTARCHA.

C. elegantior, sp. nov. Ovata; minus depressa; sat nitida; pubescens; nigro-picea, capite antice prothorace (marginibus antico et postico exceptis) elytrorum marginibus lateralibus et macula permagna communi triangulari basali antennis pedibus et pygidii lateribus rufis; capite pronotoque sat grosse sat crebre punctulatis; epistomo leviter biimpresso; prothorace fortiter transverso, antice angustato, lateribus arcuatis reflexo-marginatis, angulis posticis (superne visis) retrorsum inclinatis sat acutis, disco medio manifeste planato; elytris ad apicem truncatis, sat fortiter punctulato-striatis,

striis latera versus obsoletis (subsuturali profunda ad basin continua), interstitiis sat angustis sat planis (sed 2° manifeste, 3° vix, antice convexis). Long., $1\frac{3}{5}$ l.; lat., $\frac{4}{5}$ l.

There are about eleven punctulate striæ on each elytron, outside of which the sculpture becomes vague and the puncturation scarcely seriate,—the external of the eleven striæ becoming successively feeble. The evident convexity of the second interstice a little behind the base is suggestive of *C. depressa*, Grouv., from which the present species differs *inter alia multa* by the very much coarser puncturation of its head and pronotum, the absence of a defined keel on the pronotum, the much stronger elytral striæ, the continuity to the base of the subsutural stria, and the very slight convexity of the second elytral interstice. The elytral interstices in general though nearly flat are less decidedly so than in *depressa*. The red common triangle on the elytra has its base on the base of the elytra and its apex about the middle of the suture.

Victoria (Dividing Range and Alps).

C. subnigella, sp. nov. Ovata, postice sat fortiter angustata; minus depressa; sat nitida; pubescens; supra nigra, nonnullorum exemplorum prothoracis lateribus et elytrorum apice summo subrufescentibus, corpore subtus piceo, antennis mandibulis pedibusque rufis; capite pronotoque sat grosse sat crebre punctulatis; epistomo leviter biimpresso; prothorace fortiter transverso, antice angustato, lateribus arcuatis vix reflexo-marginatis, angulis posticis (superne visis) retrorsum inclinatis sat acutis, disco longitudinaliter carinato; elytris ad apicem truncatis, sat fortiter punctulato-striatis, striis latera versus bene definitis sed in parte humerali obsoletis (subsuturali profunda ad basin continua), interstitiis angustis subcariniformibus. Long., $1\frac{1}{2}$ l.; lat., $\frac{7}{10}$ l.

Agrees with the preceding in the presence on its elytra of a strong entire subsutural stria. There are about 14 striæ on the elytra of this species in front (with a wide non-striate but strongly punctulate interval between the eleventh and twelfth striæ),—those near the suture and lateral margins being the most strongly impressed; only about 12 striæ cross the *middle* of the elytra, the second, third and fourth becoming obsolete about the middle, and the (in front broad) interval between the eleventh and twelfth striæ narrowing behind into an additional stria. Of the interstices the first in its front part is the most strongly cariniform, the second, third, and fourth are decidedly though very finely cariniform, the fifth and eleventh indistinctly (except from certain points of view) and extremely finely cariniform, the

lateral two or three strongly so. Resembles the preceding (*C. elegantior*) in the coarse puncturation of its head and prothorax but differs from it *inter alia* very widely in coloring, also in the presence of a comparatively strong longitudinal carina on the pronotum, and the details of the elytral sculpture. A small brown *Cryptarcha* less narrowed behind (from the same region) appears to me to be a starved immature example of this insect, but may represent a distinct species.

Victoria (Northern Mountains).

COLYDIIDÆ.

PHORMESA.

P. Carpentariæ, sp. nov. Sat depressa; sat opaca; piceo-nigra, capite antice pronoti lateribus elytris (basi fascia lata mediana apice et maculis nonnullis parvis piceis exceptis) antennis pedibusque rufo-testaceis; prothorace transverso, ab apice retrorsum leviter angustato, supra confertim subtiliter aspero, utrinque bicostato, costis exterioribus integris (interioribus prope marginem anticum introrsum subito versis et hic inter se fere conjunctis, postice introrsum sic ut laquea singula formant versis), lateribus fere rectis sat anguste reflexo-marginatis subtilius crenulatis, angulis anticis fortiter productis sat acutis posticis obtusis; elytris singulis 5-carinatis, interstitiis grosse biseriatim punctulatis. Long., $1\frac{3}{5}$ l.; lat. $\frac{1}{2}$, l.

Remarkably suggestive of the European *Ditoma crenata*, Hbst., in color and markings. I think it should be placed in *Phormesa*, but it seems to incline towards *Ditoma*, its antennary furrows being very feeble, and the reflexed margin of its pronotum distinctly narrow.

Queensland (Mr. Koebele, Cairns).

TODIMA.

T. lateralis, sp. nov. Elongata, postice sat angustata; parum convexa; minus nitida; parce pubescens; rufula, capite et pronoti elytrorumque disco infuscatis; capite subquadrato, antice bifoveolato, confertim subtiliter ruguloso-punctulato; prothorace transverso, supra ut caput sculpturato, ad latera latius (quam *T. fuscæ*, Grouv. et *rufulæ*, Grouv. perspicue magis late) explanato, disco depresso, utrinque substriato, striis antice et postice incurvatis, lateribus fere rectis, angulis anticis subacutis posticis fere rectis; elytris quam prothorax parum latioribus, punctulato-striatis, interstitiis sat planis (7° subcariniformi, elytris extra hoc sat abrupte declivibus). Long., $1\frac{1}{2}$ l.; lat., $\frac{1}{2}$ l.

My two specimens of this insect differ considerably from each other in color,—one being considerably darker than the other on both the upper and under surface. The species is rather close to *T. rufula*, Grouv., its most conspicuous difference being in the form of the prothorax,—the sides of which are almost straight, with the lateral edging very distinctly wider and evidently explanate.

Victoria (in *Xanthorrhœa*, near the mouth of the Glenelg River).

PSEUDEBA (gen. nov. *Colydiidarum.*)

Caput transversum antice profunde emarginatum ad clypeum recipiendum; antennæ breves, crassæ, basi tectæ, 11 articulatæ (articulo basali minuto ceteris gradatim magis transversis, apicali brevi minus lato); palporum maxillarium articulo ultimo elongato-conico, oculi grosse granulati, superne vix manifesti; prothorax transversus, basi angustatus; elytra elongata, quam prothorax circiter duplo longiora; tibiæ modice latæ, ad apicem calcaratæ; prosternum antice profunde emarginatum, ante coxas breve; coxæ anticæ inter se sat anguste divisæ, intermediæ fere contiguæ, posticæ vix late divisæ; segmentum ventrale basale quam 2^{am} haud (quam 3um manifeste) longius, antice inter coxas sat angustum; tarsi 4-articulati, breves, sat crassi, articulis 1—3 inter se sat æqualibus (4° quam ceteri conjuncti vix breviori); corpus glabrum, sat opacum, alatum, sat convexum.

The obscure little insect for which I propose this name is evidently allied to the species mentioned in Trans. R.S., S.A., 1902, p. 318 as being probably *Eba cerylonoides*, Pasc. The curious antennæ of the two are extremely similar, but whereas in the present species there is certainly a minute basal joint (making the number of joints 11) I cannot detect any such joint in the other. The character that seems to me most distinctive of this genus is the very strong emargination of the front of the prosternum which causes the front margin of the prosternum to be considerably nearer to the coxæ than is usual in the *Colydiidæ*. I am afraid I must say of it,—as Pascoe said of *Eba*,—"for the present its affinities must be left in doubt," but there seems no other family than the *Colydiidæ* in which it could possibly be placed. It should be added that the position of the clypeus in a deep emargination of the front is a distinctive character and the same may be said of the eyes scarcely visible except when viewed from below,—which is however the case with some other *Colydiidæ* (e.g., *Deretaphrus*,—especially *D. Erichsoni*, Newm.). In general appearance this insect is not very like any other known to me,—

perhaps on a casual inspection a place not far from *Deretaphrus* would be thought of,—but many of its characters are quite inconsistent with such a place; and in Lacordaire's classification it would have to stand in the *Synchitides*.

P. novica, sp. nov. Sat elongata, pos tice angustata; ferruginea; capite prothoraceque supra crebre minus fortiter punctulatis; hoc transverso, æquali, lateribus antice leviter arcuatis, circiter medium subangulatis (hinc ad basin subsinuatim convergentibus), angulis anticis vix productis posticis acute rectis, margine antico supra fere recta quam basis manifeste latiori, hac fere recta; scutello sat magno, transverso; elytris vix manifeste punctulatis, costulis circiter 8 (his nonnihil arcuatis) subtilibus ornatis. Long., $1\frac{2}{3}$ l.; lat., $\frac{1}{2}$ l.

It will be noticed that the outline of the prothorax resembles that of *Deretaphrus*, but the segment is quite strongly transverse. The fine elevated lines on the elytra are slightly arched (the extremities of each inclined outward).

Queensland; Townsville (from Mr. F. P. Dodd).

DERETAPHRUS.

This genus seems to be very numerous in species although a comparatively small number have been described. Its species are closely allied and more or less variable,—especially in respect of size. Before describing new species it seems desirable to make some remarks on those already named. In Masters' Catalogue 11 species are enumerated, and Mr. Lea has since described four species. *D. puteus*, Newm., has been shown to be a *Bothrideres* (Journ. Ent. I., p. 460) and *D. granulipennis*, Reitt. is (see below) identical with *Erichsoni*, Newm. *D. Wollastoni*, Newm., is probably not a *Deretaphrus*; at any rate it is very different from any species before me, its pronotum being described as having a median depression on the basal half and on either side a carina extending from the hind angle of the pronotum straight forward (not following the lateral margin) towards the front of the segment. This reduces the number of valid *Deretaphri* to 12. On seven of these I remark as follows. *D. Pascoei*, Macl. is not recognisable by the description which would fit several species (e.g. *fossus*, Newm. and *ignarus*, Pasc.); as it is from Queensland (from which place I have not seen any *Deretaphri*) it is,—if a valid species,—not likely to be before me. *D. analis*, Lea, is described as having its upper surface "almost impunctate;" it also is from a locality (Northern N. S. Wales) very remote from those of the *Deretaphri* I have examined, and none of them approaches Mr. Lea's insect in respect of the character I have mentioned. *D. xanthorrhœæ*, Lea, and *parviceps*, Lea (both from W. Australia) are not described as in the least

like the one species from W. Australia that I have seen. *D. ignarus*, Pasc. (from Sydney) is said to have elytral interstices much less distinctly punctured than those of *D. fossus*, Newm.; I have not seen any *Deretaphrus* (that comes near fitting the description of *ignarus*) in which that character is apparent, nor any at all from the Sydney region; Mr. Lea has sent me a *Deretaphrus* from Forest Reefs under the name *ignarus*, but as its elytral interstices are quite as strongly punctulate as in *fossus* I cannot think it rightly named. *D. colydioides*, Pasc. may possibly be a Victorian species before me, but it is too vaguely described for confident identification.

The most reliable and tangible characters for distinguishing the species of *Deretaphrus* seem to me to be those of the pronotum, and I divide the genus into three main groups founded on the puncturation of that organ. In the first of these the punctures are extremely fine and sparse (as in *D. piceus*, Germ). In the second the punctures are still very sparse and decidedly fine, but not nearly so fine as in *piceus*. In the third group they are comparatively coarse and close (not much different from those of *D. fossus*, Newm.). Another valuable character is found in the structure of the carina and stria which form the division between the pronotum and prosternum. These do not, in any *Deretaphrus* known to me, reach the front margin of the segment, but cease at an interval from that margin which differs in different species; in some species moreover, they end by becoming gradually feebler and when that is the case the front angles of the segment (viewed from above) seem very obtuse or even non-existent, while in other species they end abruptly and in that case their terminus (viewed from above) has the appearance of being a well-defined front angle of the segment from which the apparent apical margin projects forward (with a convex front outline) towards the head. It is to be noted, however, that the terminus of the lateral carina is in no species *really* at the true front corner of the pronotum. In most of the existing descriptions of *Deretaphri* a good deal of emphasis has been laid upon the carination of the elytral interstices. So far as my observation goes it is not a satisfactory character for exact definition. In all species known to me of the genus the alternate interstices become carinate (or more strongly carinate) near the apex and undoubtedly the tendency of this carination to begin nearer to (or even *at*) the base seems characteristic of species. Nevertheless, specimens of the same species (at any rate, specimens taken in company and *apparently* of one species) seem to differ a little *inter se* in this respect, Moreover, in general the degree of convexity of the interstices looks different from different points of view. Among the considerable number of *Deretaphri* in my

collection, only one species has the third interstice of the elytra genuinely carinate (i.e. its summit a sharp keel-like edge) throughout its length, though there are a good many species in which it is "raised" or "convex" throughout.

Unfortunately there is a doubt (it seems to me) as to which of the *Deretaphri* is *fossus*, Newm.,—the type of the genus. If Newman's expression "elytron utrumque 4-carinatum" is taken strictly (i.e. as meaning that the alternate interstices are entirely carinate as distinguished from merely convex) there is only one species before me that could possibly be *fossus*,—and it is evidently the species that Pascoe calls *fossus*. It however is of a pitchy-black color, whereas according to Newman the color is "fuscus." This would seem to be a small difficulty were it not that Pascoe has described a species (*ignarus*) the description of which equally agrees with Newman's description independently of color and also agrees in color (calling it "obscure rufo-fuscus"). Pascoe distinguishes the species thus "*fossus* is pitchy black, with the elytral interstices punctured; *ignarus* is dark rufo fuscous with the elytral interstices all but unpunctured." As the interstices of the elytra (in the sense in which Pascoe uses the term) are not even mentioned in Newman's very brief description there certainly seems to be a doubt whether *ignarus*, Pasc., may not be the true *fossus*. Nevertheless the *probability* seems in favour of Newman having had before him a somewhat unusually colored specimen of the species that Pascoe calls *fossus*, inasmuch as it is much the commoner species (at any rate in the localities from which Newman obtained most of his Australian *Coleoptera*). This insect is common in Victoria and may be recognised by the following characters from all its congeners described, or known to me; color pitchy black (opaque), the legs and undersurface a little reddish; pronotum closely and strongly punctulate, with a dorsal channel reaching from close to the base to about the middle of the segment, beyond which is a vague but fairly deep depression; the elytra with shoulders strongly produced, their alternate interstices and also the sixth continuously carinate (i.e. their summit shining and knife-edge-like), all the interstices quite distinctly (though very finely and sparsely) punctulate; the (apparent) front angles of the prothorax very little marked though more distinct than in some species (e.g. *D. piceus*, Germ.).

D. thoracicus, sp. nov. Sat angustus; sat elongatus; modice nitidus; piceus, antennis pedibusque plus minusve rufescentibus; capite fortiter convexo, subtilius sat crebre punctulato; prothorace quam latiori ut 7 ad 5 longiori, sparsim subtilissime punctulato, profunde canaliculato (canali basin fere apicem nullo modo attingenti, ante medium interrupto), ad quasi-apicem quam ad mediam partem vix angustiori,

lateribus a quasi-apice ad medium subrectis fere parallelis hinc ad basin fortiter sinuatis, angulis anticis (superne visis) late obtusis sed sat bene determinatis posticis valde obtusis (ad apicem summum vix subdentiformibus), carinæ lateralis apice a segmenti margine antico late (circiter oculi diametro) distanti, parte basali utrinque foveata; elytris punctulato-striatis (striis subsuturalibus 2 subtiliter, ceteris sat grosse, punctulatis), interstitiis alternis convexis (3° ad basin et apicem, 5° 7° que totis, cariniformibus alternis vix convexis (omnibus fere impunctulatis), humeris prominentibus. Long., 5 l.; lat., $1\frac{1}{10}$ l.

This species is extremely close to *D. piceus*, Germ., indeed the only differences that I can specify are in the greater convexity of the head between the eyes and in the form of the prothorax,—but the latter is so strongly marked that I cannot but consider it specific. Viewed from above the apparent front margin of the pronotum (closely examined it is seen to be not the true front margin but the interval between the apices of the lateral carinæ of the segment) joins the lateral margin by a very open but quite distinct angle from which the sides of the segment are straight and parallel to the middle of their length; whereas in *piceus* (viewed from above) the apparent front margin is the real one and the front angles appear quite rounded off, the sides of the segment diverging in a curve from the front to the middle so that at its middle the prothorax is considerably wider than in front. The form of the quasi-front margin of the pronotum in *D. thoracicus* is almost exactly as in *D. fossus*, Newm., but in that species the sides are different (converging in a curve hindward, so that the width of the segment across the middle is notably less than across the quasi-front angles). I have examined a considerable number of South Australian examples (and a few Victorian) of *D. piceus* and find no variation whatever in the form of the prothorax.

Victoria, Glenelg River district.

D. Bakewelli, Pasc. If my identification of this insect (which I have from N.S. Wales, Victoria, and Tasmania) is correct (about which I have little doubt) it is even closer to *D. piceus* than is *D. thoracicus;* nevertheless, I believe it to be a valid species. All the examples that I have seen are of a dark ferruginous colour (certainly not due to immaturity) and are evidently more nitid than examples of *piceus*; the prothorax, too, is a little narrower behind and (therefore) with its sides a little more strongly rounded. Unless I am uniting two species under this name *D. Bakewelli* varies extremely in size, one example from the Victorian mountains being less than 3 lines long, while the largest (from N.S. Wales) is more than 5 lines. The

smaller examples seem of more slender build than the larger ones with the sides of the prothorax a trifle more strongly rounded. It is quite possible that the collection of numerous specimens of each form taken in company might establish their distinctness.

D. gracilis, sp. nov. Angustus; elongatus; sat nitidus; obscure ferrugineus; capite pronotoque fere ut præcedentis *(D. thoracici)* sed hoc magis fortiter nec magis crebre punctulato, lateribus minus fortiter marginatis et ante medium magis arcuatis, angulis posticis multo minus late obtusis; elytris seriatim fortiter punctulatis (serie subsuturali in stria sat manifesta impressa), interstitiis subtilissime sat perspicue punctulatis omnino (3° prope basin apicemque et 5° 7° que totis leviter subcariniformibus exceptis) planis. Long., $3\frac{1}{5}$ l.; lat., $\frac{7}{10}$ l. (vix).

This is a very isolated species of *Deretaphrus*,—the most decidedly nitid known to me and differing from all others that I have seen in the inner four of the interstices of its elytra (except the third close to the base and near the apex) being absolutely flat, the second, third, and fourth rows of punctures being mere isolated impressions on an even surface. The pronotum is so much like that of the preceding species that it seems unnecessary to repeat the details of its description, and sufficient to say that the description of the pronotum of *thoracicus* describes that of the present species with the qualifications noted above. The two previously known W. Australian species of *Deretaphrus* (neither of which I have, to my knowledge, seen) are described as having the third interstice keel-like.

W. Australia.

D. iridescens, sp. nov. Sat elongatus; sat angustus; sat nitidus (præcipue in pronoto); obscure ferrugineus, pronoto manifeste cæruleo-micanti; capite subtilius sat crebre punctulato; prothorace quam latiori ut 6 ad 5 longiori, supra sparsim vix subtiliter punctulato, subdepresso, profunde canaliculato (canali basin fere apicem nullo modo attingenti, ante medium interrupto, parte antica perparva), ad quasi-apicem quam ad mediam partem parum angustiori, lateribus a quasi-apice fere ad basin sat æqualiter arcuatis hinc ad basin sinuatis, angulis quasi-anticis (superne visis) late obtusis posticis sat obtusis sed ad apicem summum dentiformibus, carinæ lateralis apice a segmenti margine antico late (circiter oculi diametro) distanti, parte basali utrinque transversim impressa: elytris punctulato-striatis (striis suturalibus 2 subtiliter, ceteris sat grosse, punctulatis), interstitiis alternis leviter convexis (3° ad basin et apicem, 5° 7° que totis, subcariniformibus) alternis sat planis (omnibus vix perspicue

punctulatis), humeris parum prominentibus. Long., $3\frac{3}{5}$ l.; lat., $\frac{4}{5}$ l.

This species forms with the preceding a small group that differs from the *piceus* group by its evidently more,—and from the *fossus* group by its evidently less,—strongly punctulate pronotum. It differs from all the other *Deretaphri* known to me by the front part of the lateral outline of its prothorax forming a regular curve which passes into the posterior sinuation evident[ly] further back (i.e. nearer the base) than in the other species.

S. Australia (Adelaide district).

D. cordicollis, sp. nov. Elongatus; sat angustus; minus nitidus; piceus, femoribus magis rufescentibus; capite longitudinaliter leviter impresso, crebrius minus subtiliter punctulato; prothorace quam latiori parum longiori, supra sat crebre sat fortiter (quam *D. fossi*, Newm., vix minus fortiter) punctulato, profunde canaliculato (canali basin fere apicem sat prope attingenti, circiter medium interrupto, parte antica magna minus concinne definita), ad quasi-apicem quam ad mediam partem sat latiori, lateribus a quasi-apice ad medium leviter arcuatis hinc ad basin valde sinuatis, angulis quasi-anticis bene determinatis fere subacutis posticis leviter obtusis sed ad apicem summum sat fortiter dentiformibus, carinæ lateralis apice a segmenti margine antico minus late (oculi diametri circiter dimidio) distanti, parte basali utrinque late leviter impressa; elytris punctulato-striatis, interstitiis alternis (3° in parte media magis obtuso excepto) cariniformibus alternis (6° in parte subapicali cariniformi excepto) vix convexis (omnibus perspicue punctulatis), humeris modice prominentibus. Long., $5\frac{2}{5}$ l.; lat., 1 l.

The close and comparatively strong puncturation of its pronotum associates this insect with the *fossus* group of species. From the species which I have indicated above as being in my opinion *fossus* the present one differs *inter alia (a)* in respect of its pronotum by the much more sharply defined quasi-front angles (a character which separates it also from all the other hitherto described *Deretaphri* known to me) the much larger and deeper front part of the longitudinal channel (which however is of the same foveiform character as in *fossus)*, the evidently (though not very much) finer puncturation, the stronger lateral sinuation, the considerably more strongly dentiform apex of the hind angles, the much nearer approach of the lateral carina to the front margin of the segment; *(b)* in respect of its elytra by the third interstice being in the middle part of its length obtusely convex rather than cariniform, by the sixth interstice being cariniform only in a short space a little behind the middle, by

the shoulders being much less prominent; *(c)* in respcet of the head by the presence of a distinct (though not strongly defined) longitudinal impression.

A much smaller specimen (Long., $3\frac{3}{4}$ l.) of a ferruginous red color which I took near the summit of one of the higher Victorian mountains does not seem to differ much from this species, —the hind angles of its prothorax, however, being a little more strongly obtuse and less strongly dentiform at extreme apex and the third interstice of its elytra being non-cariniform for a considerably greater proportion of its length. It is probably a valid species, but more specimens of both forms ought to be examined before this Victorian insect is described as distinct.

Tasmania.

D. popularis, sp. nov. Sat elongatus; modice angustus; minus nitidus; nigro-piceus, antennis pedibus et corpore subtus nonnihil rufescentibus; capite longitudinaliter leviter impresso, crebre subfortiter punctulato; prothorace quam latiori ut 8 ad 7 longiori, supra crebre sat fortiter (ut *D. fossi*, Newm.) punctulato, profunde canaliculato (canali basin fere apicem nullo modo attingenti, paullo ante medium interrupto), ad quasi-apicem quam ad medium vix angustiori lateribus a quasi apice ad medium parum arcuatis hinc ad basin modice sinuatis, angulis quasi-anticis bene determinatis obtusis posticis sat obtusis ad apicem summum vix dentiformibus, carinæ lateralis apice a segmenti margine antico sat late (quam oculi diametro paullo minus late) distanti, parte basali utrinque late subobsolete impressa; elytris punctulato-striatis, interstitiis alternis (3° in parte mediana fere plano excepto) cariniformibus alternis (4° 6° que obsolete convexis exceptis) fere planis (omnibus minute punctulatis) humeris vix prominentibus. Long., 4 l.; lat. 1 l. (vix).

I do not find any very salient single character in this species to separate it from its congeners. It is nearest, I think, to the Adelaide insect which I have no doubt is *viduatus*, Pasc. and which is notable for the almost flat surface of the middle part of the third interstice of its elytra. The present species agrees with *viduatus* in that respect (and most others) but differs widely in the form of its prothorax, the lateral margin of which reaches evidently nearer to the true front margin of the segment, and the quasi-front margin of which resembles that of *Ericksoni*, Newm. but with the quasi-front angles still more pronounced and the distinction between the true and the apparent front margin much less observable from above,—in fact (as is the case also in *D. thoracicus*) scarcely discoverable except when looked at from

the side. In *D. viduatus* the portion of the outline corresponding to the quasi-front angles of *D. popularis* is so rounded off that no quasi-front angles appear, and therefore no other front margin than the true one being observable, the segment presents the appearance of being (as it *really* is in all the *Deretaphri*) very little wider across the front margin than the base.

Australia (I am not sure of the exact habitat but believe it to be the Victorian Mountains.).

D. æqualiceps, sp. nov. Sat elongatus; angustus; sat nitidus; rufo-ferrugineus; capite convexo, æquali (nullo modo impresso), sat crebre minus fortiter punctulato; prothorace quam latiori ut 7 ad 6 longiori, supra crebre minus profunde punctulato, aliter fere ut præcedentis (*D. popularis*) sed foveis subbasalibus majoribus profundioribus; elytris fere ut præcedentis sed interstitio 3° in parte discoidali sat fortiter convexo-elevato (fere subcariniformi). Long., $3\frac{1}{5}$ l.; lat., $\frac{4}{5}$ l. (vix.).

In the group of *Deretaphri* having the pronotum closely punctulate and its sulcus interrupted this species is readily distinguished by the perfectly even surface of its head which has no inequalities whatever. It also differs from them *inter alia* as follows,—from *fossus*, Newm. by its very much less prominent shoulders, from *cordicollis*, Blackb. by the non-cariniform sixth interstice of its elytra, from *popularis*, Blackb. by the much more convex third interstice of its elytra, from *colydioides* Pasc. (?) and indeed all the others not already mentioned,—by the very much more strongly defined quasi-front angles of its prothorax.

Victoria (Dividing Range).

D. sparsiceps, sp. nov. Sat elongatus; sat angustus; minus nitidus; piceus; capite sat sparsim punctulato, ad suturam clypealem mediam impresso; prothorace quam latiori ut 8 ad 7 longiori, sat crebre sat fortiter (quam *D. fossi*, Newm., minus crebre fere magis fortiter) punctulato, profunde canaliculato (canali basin fere apicem nullo modo attingenti, circiter medium interrupto, parte antica elongata) ad quasi-apicem quam ad medium haud angustiori, lateribus a quasi-apice ad medium vix arcuatis hinc ad basin fortiter sinuatis, angulis quasi-anticis male definitis (late obtusis) posticis subrectis ad apicem summum minute dentiformibus, carinæ lateralis apice a segmenti margine antico late (circiter oculi diametro) distanti, parte basali utrinque depressa; elytris punctulato-striatis, interstitiis alternis quam cetera vix (ad apicem magis fortiter, 5° toto leviter subcariniformi, exceptis) magis convexis alternis subplanis (omnibus subtiliter punctulatis), humeris vix prominentibus. Long., $4\frac{1}{5}$ l.; lat., $\frac{7}{10}$ l.

This species has the quasi-front angles of its prothorax extremely obtuse (as in *fossus*, Newm.), the true lateral margins of the segment converging forward from them much less strongly than in the three preceding species so that there is a much longer piece of the pronotum in front of them; they are, however, quite distinctly angles and not rounded off as they are in the species that I take to be *viduatus*, Pasc. The elytral sculpture is much like that of the latter species from which however it is readily distinguished not only by the better defined quasi-front angles of the prothorax, but also by the very much less close puncturation of the head.

S. Australia (Eyre's Peninsula).

D. cribriceps, sp. nov. Elongatus; angustus; minus nitidus; piceus, antennis pedibusque obscure rufescentibus; capite creberrime strigatim subrugulose punctulato, ad suturam clypealem mediam impresso; prothorace quam latiori ut 6 ad 5 longiori, crebre fortiter (ut *D. fossi*, Newm.) punctulato, ut præcedentis *(D. sparsicipitis)* canaliculato, ad quasi-apicem quam ad medium perspicue angustiori, lateribus a quasi-apice ad medium manifeste arcuatis hinc ad basin sat fortiter sinuatis, angulis quasi-anticis rotundatis posticis leviter obtusis ad apicem summum dentiformibus, carinæ lateralis apice a segmenti margine antico late (circiter oculi diametro) distanti, parte basali utrinque transversim impressa; elytris punctulato-striatis, interstitiis alternis (3° in parte mediana excepto) cariniformibus alternis parum convexis (omnibus minus perspicue punctulatis), humeris vix prominentibus. Long., 4 l.; lat., $\frac{7}{10}$ l.

This species differs from all the preceding (of the group having the pronotum closely punctured) by the lateral outline being rounded at the part where they have the angles that I have called the quasi-front angles of the pronotum. In this respect it agrees with *D. viduatus*, Pasc., from which it differs *inter alia* by the third interstice of its elytra being cariniform at the base as well as the apex, and by the sculpture of its head, closer and quite evidently rugulose and not longitudinally sulcate in the front part; the unique type moreover is much smaller than any specimen of *viduatus* that I have seen. The obsolete puncturation of the elytral interstices is suggestive of *ignarus*, Pasc., but the brief description of that species implies that the third interstice of the elytra is entirely cariniform, and represents the insect as differently colored and much larger. There is little in the description of *D. colydioides*, Pasc., to distinguish that species from the present one as it is an extremely short and vague description, but it indicates *colydioides* as very much smaller, and

remarkable for its cylindrical form; and I do not find any very noticeable difference in form between this and other species.

Victoria (taken by Miss Waterhouse near Ballarat).

D. viduatus, Pasc. I have several examples taken near Adelaide (the original locality) which agree with Pascoe's brief description and are no doubt the species to which he gave this name. It is near the preceding *(D. cribriceps)* but differs as specified above. Its head is evidently larger than that of *cribriceps* and is non-rugulosely and less closely punctulate, with a well marked longitudinal median impression traversing the clypeus and produced hindward more or less behind the clypeal suture. Pascoe's brief description does not refer to the third interstice of the elytra in particular, merely saying that the interstices near the suture are not raised except at the apex and base. In a short note following the description, however, it is stated that the third interstitial line is not prominent. The fact is that of the nearest four interstices to the suture none are distinctly raised anywhere except the third, which is quite strongly cariniform in about its apical one-fifth and is evidently convex close to the base, becoming cariniform on the basal declivity of the elytra.

D. granulipennis, Reitt. This name is evidently a synonym of *D. Erichsoni*, Newm., the description of which was clearly unknown to Reitter, inasmuch as he says that his species differs from all those previously described in having the sulcus of the pronotum continuous,—while Newman had attributed that character to *Erichsoni*. A comparison of the descriptions is quite conclusive as to their having been founded on a single species. I believe this synonymy has not been previously noted.

The following is a tabular statement of the distinctive characters of the *Deretaphri* known to me :—

A. The sulcus of the pronotum deep and sharply defined.
  B. Pronotum excessively finely—almost invisibly—punctulate.
    C. Sides of prothorax rounded in front half.
      D. Nigro-piceous, subopaque; prothorax less narrowed at base ... ... *piceus*, Germ.
      DD. Fuscous-red, nitid; prothorax more narrowed at base ... . *Bakewelli*, Pasc.
    CC. Sides of prothorax straight and subparallel in front half ... ... *thoracicus*, Blackb.
  BB. Pronotum notably more strongly (but still sparsely and finely) punctulate.
    C. Inner 4 interstices of the elytra absolutely flat (except third close to base and apex) ... *gracilis*, Blackb.
    CC. Inner 4 interstices of elytra very evidently not flat ... ... *iridescens*, Blackb.
  BBB. Pronotum strongly and closely punctulate.
    C. The third interstice of the elytra genuinely cariniform throughout (shoulders strongly produced).

D. Elytral interstices distinctly punctulate ... *fossus*, Newm.
DD. Elytral interstices scarcely visibly punctulate ... . *ignarus*, Pasc.
CC. The third interstice of the elytra not cariniform except near base and apex.
D. Quasi-front angles of prothorax well defined.
E. The sixth elytral interstice strongly cariniform in part of its hind half ... ... *cordicollis*, Blackb.
EE. The sixth elytral interstice not cariniform.
F. Middle of region of elypeal suture deeply impressed ... ... *popularis*, Blackb.
FF. Surface of head quite evenly convex ... *æqualiceps*, Blackb.
DD. Quasi-front angles of prothorax quite rounded off.
E. Head sparsely punctulate ... ... *sparsiceps*, Blackb
EE. Head c osely punctulate.
F. Clypeus even ... ... *cribriceps*, Blackb.
FF. Clypeus longitudinally sulcate ... *viduatus*, Pasc.
AA. The sulcus of the pronotum vaguely defined and shallow ... ... *Ericksoni*. Newm.

PYCNOMERUS.

This genus is regarded by Dr. Sharp as inseparable from *Penthelispa*, which Pascoe founded for species admittedly congeneric with *P. fuliginosus*, Er. There is no need to discuss here the correctness or otherwise of Dr. Sharp's pronouncement inasmuch as Pascoe appears to be clearly in error in regarding the European *Cerylon terebrans* as the type of *Pycnomerus*. Under the diagnosis of *Pycnomerus* Erickson states that he divides the genus into three sections the first of which consists (he says) of species having eleven-jointed antennæ, the second of species having antennæ ten-jointed, and the third eight-jointed; and then follows the description of *P. fuliginosa*. This evidently implies that the first section is to be treated as the typical one and it is difficult to understand why Pascoe regarded the second section as the typical one and proposed a new name for the first.

P. politus, Lea. Mr. Lea has been good enough to send me some specimens of this insect. An example of it from Queensland had been sent to me previously by M. Grouvelle as *P. secutus*, Pasc. I am of opinion that M. Grouvelle's identification is incorrect, for although Pascoe's description is much too brief to allow of certainty I have a species from Victoria (Pascoe's locality) which agrees better with the description of *secutus*. Mr. Lea's insect, however, seems to me to be probably the same species that Mr. Olliff ("Insects of Lord Howe Island," p. 10) mentions as occurring in Queensland and refers to *P. longulus*, Shp.,—a New Zealand insect. Unfortunately Olliff gives no authority for his reference and very strong authority would be required to establish its correctness. Dr. Sharp's description of *longulus* (like Pascoe's of *secutus)* is too brief to be of much value. This species therefore must be regarded as needing

further elucidation, but I think it most probable that Lea's name will stand.

P. obscurus, Pasc. This name seems to be without doubt a mere synonym of *P. fuliginosus*, Er. The two descriptions are almost in the same words. Pascoe must have overlooked Erickson's species, since if he had known it he could hardly have omitted to specify the characters by which he considered his species to differ from it. I have taken in Tasmania (Erickson's locality) and Victoria (Pascoe's locality) numerous examples which are evidently of but one species and which agree well with both descriptions. The pronotum varies slightly in the distinctness of its dorsal impressions and also in the sinuation of its sides, but the variations seem to occur equally among Tasmanian and Victorian specimens. I think this synonymy has not been previously noted.

P. robusticollis, sp. nov. Minus angustus; minus nitidus; sparsissime vix perspicue pubescens; nigro-piceus; capite crebre rugulose subgrosse punctulato, antice profunde bifoveolato; antennis crassis brevibus; prothorace leviter transverso, supra ut caput (quam *P. fuliginosi*, Er., multo magis profunde) punctulato, fovea magna subquadrata profunda (hac intus certo adspectu bifida) impresso, postice leviter angustato, lateribus sat rectis, angulis anticis prominentibus sat acutis posticis obtusis bene determinatis, margine antico fortiter sinuato; elytris fortiter crenato-striatis, interstitiis planatis seriatim punctulatis. Long., $2\frac{1}{5}$ l.; lat., $\frac{3}{5}$ l.

This species is near *P. fuliginosus*, Er., but very distinct from it, differing *inter alia* by its very evidently stouter antennæ, its prothorax distinctly wider than long and having *obtuse* hind angles, its head and pronotum much more deeply punctulate. The dorsal excavation of its pronotum is considerably deeper and more defined than that of any example I have seen of *P. fuliginosus*, Er. Viewed obliquely from behind, the excavation has much the appearance of the front excavation of *Bothrideres equinus*, Pasc.; viewed obliquely from in front it is seen to be divided into two sulci by a longitudinal convexity. Behind the middle of the base of the excavation is a shining unpunctured space much larger than that in any specimen that I have seen of *fuliginosus*.

Victoria.

P. interstitialis, sp. nov. Modice angustus; sat opacus; sparsissime vix perspicue pubescens; piceus, antennis pedibusque nonnihil rufescentibus; capite sat crebre sat rugulose nec profunde (ut *P. fuliginosi*, Er.) punctulato, antice profunde bifoveolato; antennis minus crassis (quam *fuliginosi* gracilioribus); prothorace quam latiori vix longiori, supra fere

ut caput sed paullo magis profunde punctulato, longitudinaliter in dorso leviter biimpresso, postice vix angustato, lateribus sat rectis, margine antico vix sinuato, angulis anticis haud prominentibus posticis leviter obtusis (fere rectis); elytris fortiter crenato-striatis, interstitiis angustissimis perspicue (nec alte) cariniformibus haud perspicue punctulatis. Long., $1\frac{3}{5}$ l.; lat.. $\frac{1}{2}$ l.

The interstices of the elytra very narrow (fine cariniform lines) in themselves abundantly distinguish this species from the two previously described Australian *Pycnomeri (fuliginosus* and *robusticollis)* of the subopaque group.

Tasmania.

P. sulcicollis, sp. nov. Modice angustus; sat opacus; sparsim minus perspicue pubescens; obscure ferrugineus; capite sat crebre sat rugulose nec profunde (ut *P. fuliginosi*, Er.) punctulato, antice profunde bifoveolato; antennis (ut *fuliginosi*) sat crassis; prothorace quam latiori vix longiori, supra fere ut caput sed paullo magis profunde punctulato, in dorso longitudinaliter vix perspicue impresso, transversim paullo ante medium arcuatim sulcato (sulco ad medium obsoleto), postice leviter angustato, lateribus crenulatis antice sat arcuatis hinc retrorsum fortiter sinuatis, margine antico vix sinuato, angulis anticis haud prominentibus posticis fortiter obtusis sed ad apicem summum minute dentiformibus; elytris sat fortiter crenato-striatis, interstitiis angustissimis perspicue (nec alte) cariniformibus haud perspicue punctulatis. Long., $1\frac{7}{10}$ l.; lat., $\frac{1}{2}$ l.

The sculpture of its pronotum widely separates this species from all the previously described Australian *Pycnomeri*. That segment is slightly flattened dorsally with no well defined inequalities except an arched transverse sulcus slightly in front of the middle of the segment—the sulcus very faint in the middle and deep in the lateral region. The insect appears to be a genuine *Pycnomerus*. It is the most decidedly opaque species known to me of the genus.

Victoria (Dividing Range).

Tabulation of Characters of the described Australian Pycnomeri of the opaque or sub-opaque Group.

A. Interstices of elytra flattened and conspicuously punctulate.
  B. Hind angles of pronotum sharply rectangular (prothorax longer than wide) ... ... *fuliginosus*, Er.
  BB. Hind angles of pronotum obtuse (prothorax transverse) ... ... *robusticollis*, Blackb.
AA. Interstices of elytra convex, very narrow, and not distinctly punctulate.
  B. Pronotum not transversely impressed ... *interstitialis*, Blackb.
  BB. Pronotum transversely impressed about the middle ... ... *sulcicollis*, Blac

CERYLON.

The following species is closely allied to some of the European members of the genus *Cerylon*, which genus in Lacordaire's classification belongs to a "Tribe" of the *Colydiidæ* that has not —so far as I know—been previously reported as Australian.

C. alienigenum, sp. nov. Minus convexum, sat latum (forma fere ut *C. ferruginei*, Steph.); obscure ferrugineum, prothorace piceo; nitidum; antennis (fere ut *C. ferruginei*, sed clava breviori latiori) sat robustis, articulis 2° 3° que brevibus; capite subtilissime punctulato; prothorace subquadrato, supra quam *ferruginei* minus fortiter minus crebre punctulato, ad basin utrinque profunde impresso; elytris punctulato-striatis, striis profundis versus apicem (subsuturali excepta) obsoletis (subsuturali antice abbreviata, 2ª 4ª basin attingentibus, 5ª 6ª que antrorsum parum ultra medium productis, interstitiis latis planis vix perspicue punctulatis; sternis et segmento basali ventrali ad latera grosse sparsim punctulatis; hoc in medio oblique bistriato (fere ut *Diphylli*). Long., 1 l.; lat., $\frac{2}{3}$ l.

Like the European *C. ferrugineum*, Steph., in form and color except in the prothorax being considerably darker than the elytra. The pronotum (compared with that of others known to me of the genus) is less strongly and less closely punctulate. The fifth and sixth striæ of the elytra are very short.

N.S. Wales.

CUCUJIDÆ.

PROSTOMIS.

The members of this genus (especially males) seem to be rare in collections, and the species are closely allied *inter se.*

P. Atkinsoni, Waterh. I have taken in Tasmania (and have received from several Tasmanian correspondents) a *Prostomis* which I presume to be this species. I cannot say that it agrees very exactly with the description; but weighing in combination the two facts—that I have seen no other *Prostomis* from Tasmania and that this particular one is the only *Prostomis* I know with the puncturation of the head and pronotum very fine (a character which its author attributes to *P. Atkinsoni*)—I do not see much room for doubt. The principal differences are as follows:—Waterhouse calls the sides of the prothorax "vix arcuatis," whereas in the species before me they are certainly more rounded (especially in the male) than that expression makes them; Waterhouse's sexual distinctions do not fit the species before me. I have two specimens taken under the bark of one tree which I cannot doubt are male and female of a single species —one of them, which I have no doubt is the male, is Long., $4\frac{1}{2}$ l.

(the other being Long., $3\frac{1}{2}$ l.) and has mandibles much more developed than the other, considerably longer antennæ, a much larger and wider head, and a larger prothorax (of which the sides are quite strongly rounded). Waterhouse makes no reference to any sexual difference in the antennæ, calls the sculpture of the female "more distinct throughout" and says that its prothorax is constricted behind the front angles (it is slightly so in the specimen I have above called the male, but not in the other). My specimens do not show any noticeable difference in the sculpture (i.e. puncturation and striation) between the sexes. I do not think Waterhouse *reversed* the sexes, as his description of the form of the mandibles is inconsistent with his having done so. It will be noted that the sexual distinctions as I have described them are very similar to those of many *Læmophlœi* and other *Cucujidæ*. In this species the left mandible and jugular process are considerably longer than the right The apical ventral segment is somewhat narrowly rounded in both sexes and in the male (as in others of the genus) is thickened and somewhat reflexed round its apex. The left jugular process bears an external obtuse feebly defined tooth considerably in front of the middle and at the apex is dilated and truncate—the truncate front margin being subdentiform at both ends (especially the external end).

P. intermedius, Blackb. My description of this species needs amending, as at the time I made it I had not before me specimens of any *Prostomis* that I could rely upon as being the sexes of one species and consequently I treated sexual characters as specific. The type is a female and I have since taken a specimen in the Victorian Dividing Range which I have no doubt is its male. It will be convenient to substitute the following for the original description.

Mas. Elongatus; angustus; postice sat fortiter angustatus; nitidus; glaber; piceus, capite prothorace pedibus maculisque in elytris nonnullis indeterminatis rufescentibus; mandibulis minus latis, valde elongatis, crebre subtilius punctulatis, ad latera modice angulatis, sinistro quam dexter longiori; processubus jugularibus inter se disparibus, sinistro longe ultra medium dente externo armato hinc ad apicem acuminato (apice ipso sat acuto, oblique intus et deorsum curvato), dextro multo breviori leviter sinuato ad apicem acuminato; capite quam corpus ceterum latiori, sparsim subtiliter punctulato, postice transversim sulcato (sulco fortiter punctulato); antennis sat elongatis, prothoracis basin fere attingentibus, articulis 3° quam latiori paullo longiori 9°—11° clavam male definitam formantibus (9° 10° que vix transversis); prothorace sat quadrato sed leviter transverso, sparsim subtiliter

punctulato, obsolete canaliculato (canali et antice et postice sat late abbreviato), lateribus minus arcuatis, angulis obtusis nullo modo prominentibus; elytris punctulato-striatis (sculptura apicem nec basin versus obsoleta), striis 4° 5° que et interstitio 5° pone humerum sat fortiter depressis. Long., $5\frac{2}{5}$ l.; lat. (trans caput), 1 l.

Fem. minore (Long., 4 l.); colore (exempli typici) toto luteo; mandibulis processubus jugularibus antennisque brevioribus; capite paullo minus lato, magis convexo.

In my original description the term "subtilissime punctulata" applied to the head and pronotum is not a happy one in view of the fact that the same in *Atkinsoni* are still more finely punctulate. The left mandible of the male is nearly twice as long as the interval between the clypeal suture and the posterior transverse sulcus of the head—that of the female nearly once and a half the same interval. Compared with the species I have identified with *P. Atkinsoni* (see above) this species is considerably less finely and less sparsely punctulate on the mandibles head pronotum and metasternum; its mandibles are considerably longer and narrower in both sexes, its antennæ are a trifle shorter and stouter in both sexes (the third joint, especially, being shorter), the left jugular process is of a very different shape, the punctulate striæ are evidently better defined close to the base, and the post-humeral depression is much stronger (in *Atkinsoni* almost obsolete); this consists of a slightly elongate gentle concavity extending in width from the fourth to the sixth interstice, and therefore including two striæ and the interval between them. I attach very little importance to the difference in colour.

Victoria.

P. cornutus, Waterh. My example of this species is a female (Long., $2\frac{1}{2}$ l.). Its antennæ are a trifle (and its mandibles much) shorter than those of *intermedius*. The left mandible is a little longer than the right, but the two jugular processes are alike in size and shape. These latter are devoid of a defined external tooth and are of sinuate-acuminate shape from the middle to the apex, where they are sharply pointed. The third joint of the antennæ is not longer than wide. The well-defined round fovea on the clypeus (referred to by Waterhouse) is probably a reliable character. The longitudinal channel of the pronotum is considerably more defined than in any other *Prostomis* known to me. The position of the jugular processes rendering them visible from above is a very remarkable character. The prothorax is not transverse.

P. gladiator, sp. nov. Fem. Elongatus; angustus; postice minus angustatus; nitidus; glaber; rufo-ferrugineus, antennis

mandibulisque nonnihil obscurioribus; his minus elongatis minus latis, ad latera vix angulatis, cetera ut *P. intermedii*, Blackb.; processubus jugularibus fere ut *P. intermedii* sed sinistro externe inermi; capite fere ut *P. intermedii* sed paullo minus lato; antennis quam *P. intermedii* paullo gracilioribus vix brevioribus, articulis 3° quam latiori vix longiori 10° manifeste transverso; prothorace vix transverso, antice subangustato, cetera ut *P. intermedii;* elytris fere ut *P. intermedii* sed pone humeros vix perspicue depressis. Long., $3\frac{1}{6}$ l.; lat, $\frac{4}{6}$ l.

This species is so like *P. intermedius* (of the same sex) that it seems unnecessary to repeat the diagnosis of that species in all its details; it may be read as the diagnosis of *P. gladiator* subject to the qualifications specified above. Compared with *intermedius* (female) the mandibles are distinctly shorter (the left one not much longer than the distance from the clypeal suture to the transverse sulcus) and scarcely angulate externally, the left jugular process has no external tooth, the antennæ are more slender with the third joint distinctly shorter and the tenth a trifle more transverse, the head is very evidently narrower and more convex, the prothorax is very conspicuously narrower with its front decidedly narrower than its base, and the elytra are almost without any post-humeral impression and also are less narrowed behind. It was on the authority of this insect that in my original description of *P. intermedius* I gave N.S. Wales as a habitat, thinking that the differences between *intermedius* and *gladiator* might be sexual—which, however, I now know they are not.

N.S. Wales (Blue Mountains); given to me by the late Mr. Olliff.

Tabulation of the Described Australian Species of Prostomis.

A. Jugular processes invisible from above.
  B. Left jugular process acute at apex.
    C. Left jugular process toothed externally before the apex ... ... *intermedius*, Blackb.
    CC. Left jugular process unarmed externally ... *gladiator*, Blackb.
  BB. Left jugular process dilated and truncate at apex ... ... *Atkinsoni*, Waterh. ?
AA. Jugular processes visible from above ... *cornutus*, Waterh.

IPSAPHES.

This name cannot stand, as it is undoubtedly a synonym of *Platysus*—indeed I have no doubt of *I. mœrosus*, Pasc. (the type of *Ipsaphes)*, being even specifically identical with *P. obscurus*, Er. (the type of *Platisus)*. Pascoe's action in founding *Ipsaphes* is incomprehensible since the most noteworthy

distinction he indicates from *Platisus* is "the denticulate margins of the prothorax," and Erickson in describing *P. obscurus* had written "margine (thoracis) denticulato." I suppose Pascoe must have compared his insect with some specimen that was wrongly named *Platisus* and have not referred to the diagnosis of the genus. I have not seen any previous note of this synonymy.

I. bicolor, Olliff. This insect is certainly not a *Platisus*, and I can find no reason to separate it from *Cucujus*. It has the basal joint of the tarsi very short It must be extraordinarily close to *Cucujus coloniarius*, Olliff. Their author published the description of the two in the same memoir and stated that the two had been taken in company. Both descriptions are decidedly lengthy and yet almost identical; comparing them together the only definite points of difference I can find are that the clypeus in *coloniarius* is "truncate" in front and in *bicolor* "very slightly emarginate," the antennæ in *coloniarius* "rather longer than" (in *bicolor* "about as long as") the head and prothorax, the sides of the prothorax in *coloniarius* "feebly serrate" (in *bicolor* "provided with short blunt teeth"), the scutellum in *coloniarius* "rounded" (in *bicolor* "somewhat pointed") behind, and a few other such slight variation of terms; also the under-surface of *coloniarius* is called "black" (without qualification) and that of *bicolor* "black, with the abdominal segments rather bright red." Various characters—e.g. those of the angles of the prothorax—are described in respect of one or other only of the two (if they are two) species. Strange to say, although he described on successive pages of his memoir these two insects taken in company, of practically the same size, and evidently of remarkable superficial similarity *inter se*, Olliff makes no remark on their resemblance to each other and does not mention the characters of either in describing the other. Nevertheless I am disposed to believe that he had before him two valid species of *Cucujus* on the following grounds:—I have before me specimens of an insect which I have taken somewhat freely on the Victorian Mountains and which there can be no doubt is *Ipsaphes bicolor*, Oll. (though, as stated above, it is certainly not congeneric with *I. mœrosus*, Pasc., *Platisus*, Er.). In a fairly long series there is not one with a black abdomen—though several have the abdomen slightly spotted with black. In combination with that undoubted color difference, I find that the specimens in question do not agree with the description of *coloniarius* in an important character, the hind angles of the prothorax being sharply rectangular (even subdentiform), whereas Olliff says that those angles in *coloniarius* are "rounded"—he does not specify their character in *bicolor*. The only conclusion possible

therefore is that the two species although congeneric and greatly resembling each other superficially, are distinct.

LÆMOPHLŒUS.

The Australian species of this genus are moderately distinct *inter se*, most of them having some strongly marked character. Unfortunately, however, some of them have been very insufficiently described. Two cosmopolitan species have been reported from Australia (*ferrugineus*, Steph., and *pusillus*, Schönh.), and also *L. testaceus*, Fab. I do not know whether there is any authority for the occurrence of the last-named beyond its mention as Australian by Mr. Olliff; as will be seen below. I doubt whether the insect that author referred to is really *testaceus*. The specific characters of *Læmophlœi* are strongly marked, in some cases in the sexual characters, in some in the colour and pattern, in some in the structure of the prothorax or elytra. The striation of the elytra is of a peculiar kind and appears different in the same specimen from different points of view, so that different authors state their number differently (e.g. the dorsal striæ of *L. ferrugineus*, Steph., are stated by its author to be three, but Erichson calls them four). If a specimen of that insect be held obliquely with its head directed towards the observer there seem to be numerous ill-defined striæ but if it be looked at from the side (across the specimen) there is a certain point of view from which it seems to have very distinctly only three dorsal striæ. This introduces an element of uncertainty into descriptions of *Læmophlœi* which merely state that the elytra have such-and-such a number of dorsal striæ, and therefore in the following descriptions I endeavour to indicate the nature of the striation more exactly. The only Australian *Læmophlœi* that I have seen not having the dorsal striæ of their elytra of the same character as in *ferrugineus* are *amabilis*, Oll., and the species described below as *L. Frenchi*, in which the intermediate feeble striæ that in the other species are visible from favorable points of view are all but non-existent. Among the Australian *Læmophlœi*, however, the striation of the elytra does not seem to me in general a very useful character for the determination of species. In tabulating the species of this genus the structure of the prothorax seems to form the best character for constructing groups.

The following tabulation of the characters of the described Australian *Læmophlœi* includes all that I can ascertain to have been described. Some of the species are unknown to me in nature and these I have placed on the authority of descriptions and figures. In some instances I have had to assume the absence of a character from its not being mentioned in the description—

especially I have assumed that the sublateral striæ of the pronotum are not of conspicuously exceptional structure where their structure is not stated to be so. To guard against possible error through this assumption the names of the species concerning which there is such doubt are in italics :—

A. Pronotum with only one well defined stria on either side.
  B. The front angles of the prothorax not distinctly defined (when viewed from above).
    C. Sides of prothorax strongly rounded (antennæ of male very remarkable) ... diemenensis, *Blackb.*
    CC. Sides of prothorax at most feebly arcuate.
      D. Disc of pronotum bearing a shining tubercle.
        E. Form very narrow and elongate.
          F. Hind angles of prothorax sharp (as seen from above) ... ... murrayensis, *Blackb.*
          FF. Hind angles of prothorax obtuse (as seen from above) ... ... pusulæ, *Blackb.*
        EE. Form much wider and less elongate... pusillus, *Schönh.*
      DD. Disc of pronotum even.
        E. Prothorax not (or very slightly) narrowed behind ... ... Lindi, *Blackb.*
        EE. Prothorax much narrowed behind.
          F. Form very narrow and fragile ... insignior, *Blackb.*
          FF. Form much more robust ... ... ferrugineus, *Steph.*
  BB. The front angles of the prothorax well defined.
    C. Pronotum and elytra not bearing rows of tubercles.
      D. Prothorax wider than long.
        E. General colour testaceous or light brown —no well defined markings.
          F. The sublateral striæ of the pronotum simple.
            G. Forehead with a longitudinal impressed line.
              H. The intermediate dorsal striæ of the elytra present.
                I. Front angles of prothorax decidedly dentiform ... ... *testaceus*, Fab.
                II. Front angles of prothorax not dentiform ... ... *contaminatus*, Gr.
              HH. The intermediate dorsal striæ of the elytra obliterated *as striæ* ... ... *lepidus*, Gr.
            GG. Forehead not having an impressed longitudinal line.
              H. Prothorax strongly transverse ... *conterminus*, Oll.
              HH. Prothorax feebly transverse ... *Leachi*, Gr.
          FF. Sublateral stria of pronotum very much deepened on its hind half.
            G. Form comparatively narrow.
              H. Antennæ of female rather elongate and scarcely clubbed . . Macleayi, *Oll.*
              HH. Antennæ of female quite short and rather distinctly clubbed difficilis, *Blackb.*

GG. Form notably wider ... ... rigidus, *Oll.*
FFF. Sublateral striæ of pronotum dilated into a deep wide fovea behind middle ... ... Australasiæ, *Blackb.*
EE. Elytra with well defined markings,
F. General colour testaceous—markings of the elytra dark.
G. The intermediate dorsal striæ of the elytra obliterated as striæ.
H. Elytra with a large humeral spot (and a submedian fascia) ... amabilis, *Oll.*
HH. Elytra not having a humeral spot (only a postmedian fascia) ... ... insignis, *Gr.*
GG. The dorsal striæ of the elytra normal ... ... tasmanicus, *Gr.*
FF. General colour dark. Elytra with pale markings.
G. General colour metallic green ... Ramsayi, *Oll.*
GG. General colour blackish (antennæ of male very remarkable) ... Frenchi, *Blackb.*
DD. Prothorax not wider than long ... parvulus, *Gr.*
CC. Pronotum and elytra having rows of tubercles ... ... tuberculatus, *Gr.*
AA. Pronotum with two well defined sublateral striæ on either side ... ... bistiatus, *Gr.*

L. diemenensis, sp. nov. Mas. Depressus; sat latus; nitidus; vix pubescens; testaceo-brunneus; capite magno, quam prothorax vix angustiori, subtiliter minus crebre punctulato, postice in medio leviter foveolato (fovea antrorsum subtiliter lineatim producta), clypeo antice truncato; oculis parvis; antennis quam caput prothoraxque conjuncta paullo longioribus, articulis basali quam sequentes 5 vix breviori fortiter arcuato (ut *L. Fauveli*, Gr., sed ad apicem parum dilatato) ad apicem late truncato, 2°—7° (2° 7° que leviter, 3° 6° que fortiter, 4° 5° que fortissime) transversis, 8° parvo, 9° 10° que quam hic sat longioribus, 11° quam 10us fere duplo longiori; prothorace quam longiori ut 3 ad 2 latiori, postice parum angustato, sparsius subtilius punctulato, utrinque unistriato, disco planato, lateribus sat fortiter arcuatis, angulis anticis (superne visis) haud bene definitis posticis minute dentiformibus; elytris (certo adspectu) striis dorsalibus 3 (ut *L. ferruginei*, Steph.) impressis, latera versus carinatis, interstitiis leviter punctulatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{1}{2}$ l.

The remarkable antennæ of this species at once distinguish it from all its Australian congeners and from all other *Lamophlæi* known to me. It seems to be allied to *L. Fauveli*, Gr., which it somewhat resembles in outline, but the antennæ of the male are very different, it is differently colored, its eyes are much smaller than those of *Fauveli* appear in the figure, &c.

Tasmania.

L. murrayensis, sp. nov. Mas. Sat angustus; modice elongatus; nitidus; parum pubescens; testaceus; capite quam prothorax haud angustiori, subtiliter minus crebre punctulato, sat convexo, utrinque longitudinaliter impresso, sulco mediano nullo, clypeo antice subtruncato; antennis gracilibus, quam corpus haud multo brevioribus, articulis apicalibus quam latioribus multo longioribus; prothorace parum transverso, postice leviter angustato, supra subtilius subsparsim punctulato, utrinque subtiliter unistriato, disco planato pernitido tuberculo parvo vix pone medium instructo, lateribus leviter arcuatis, angulis anticis (superne visis) haud bene definitis posticis sat acute rectis; elytris (certo adspectu) striis dorsalibus 3 (ut *L. ferruginei*, Steph.) impressis, latera versus tenuiter carinatis, interstitiis perspicue punctulatis.

Feminæ capite angustiori, antennis quam caput prothoraxque conjuncta parum longioribus, articulis 9° 10° que quam latioribus vix longioribus; forma magis elongata, magis parallela. Long., $\frac{4}{5}$ l.; lat., $\frac{3}{10}$ l. (fere).

The form and proportions of this species (especially the female) are well represented by M. Grouvelle's figure of *L. bistriatus* (Ann. Soc. Ent. Fr., 1877, Pl. ii., fig. 8), but I cannot find any trace of duplication in the striæ of the pronotum, and the punctures of the head and pronotum are very much closer than they are represented in that figure. It belongs to the group of *Læmophlœi* having a single stria on either side of the pronotum and the front angles of that segment not prominent, of which the described species already known as Australian are *ferrugineus*, Steph., *parvulus*, Gr., and *pusillus*, Schönh. I took a single example on the Victorian mountains of a *Læmophlœus* (female) which is extremely close to *Murrayensis* but probably distinct Its prothorax is considerably more narrowed behind and not flattened dorsally; its tubercle also is smaller and nearer to the front. It is better, however, in the case of so extremely close a species not to describe without seeing the male.

S. Australia (near Murray Bridge).

L. Lindi, Blackb. In my diagnosis of this species (P.L.S., N.S.W., 1888, p. 841) I characterised its pronotum as "utrinque subtiliter bistriatum" and in the remarks that followed I noted the external of the two striæ as "extremely fine and scarcely continuously traceable." Since the issue of that diagnosis I have had the opportunity of examining numerous specimens of the same species and find that in some of them this second stria is so faint and fragmentary as to be practically wanting. Unfortunately I do not possess an example, for comparison, of any of the very few other species of the genus that have been diagnosed as

with the pronotum "utrinque bistriatum" but an examination of the figures of some of them leads me to think that (at any rate in some—probably all) the second stria is very clearly defined and not much different from the inner one. The pronotum of *Lindi* therefore should I think be called "utrinque unistriatum" with the qualification that in some examples there are faint traces of a second stria. I find also that the short furrow on the forehead (referred to in my diagnosis) is not at all clearly defined in some examples and is not a character on which much reliance can be placed. It seems therefore desirable to furnish an amended diagnosis, which will be found below. Unless all the examples that I have seen are of one sex the sexual distinctions of this species are extremely slight, as in all of them the head is scarcely as wide as the prothorax, and there is very little difference in the antennæ. In some, however, the antennæ seem to be slightly longer—especially their ninth and tenth joints—than in others. I may add that I have a specimen from the Victorian mountains which differs from my South Australian specimens in having the pronotum evidently less closely punctured, with the disc flattened, otherwise presenting no notable distinction. It is probably another species, but more specimens should be examined before it is described.

Elongatus; angustus; postice leviter angustatus; nitidus; rufo-testaceus; capite (exemplorum visorum) quam prothorax parum angustiori, sat convexo, subtiliter crebrius punctulato, utrinque longitudinaliter vix impresso, sulco mediano brevi (leviter vel vix) impresso, clypeo antice subtruncato; antennis modicis, quam caput prothoraxque conjuncta vix longioribus, articulis 9° 10° que quam latioribus paullo vel vix longioribus; prothorace quam longiori parum latiori, postice parum angustato, supra fere ut caput punctulato, utrinque unistriato (nonnullorum exemplorum stria secunda obsolete impresso), lateribus parum arcuatis, angulis anticis (superne visis) haud bene definitis posticis sat acute rectis; elytris (certo adspectu) striis dorsalibus 3 (ut *L. ferruginei*, Steph.) impressis, latera versus tenuiter carinatis, interstitiis punctulatis. Long., 1 l.; lat., $\frac{3}{10}$ l. (vix).

S. Australia.

L. pusulæ, sp. nov. Fem. Elongatus; nitidus; parum pubescens; testaceus; capite quam prothorax vix angustiori, minus subtiliter crebrius punctulato, minus convexo, utrinque longitudinaliter impresso, sulco mediano nullo, clypeo antice vix emarginato, antennis gracilibus quam caput prothoraxque conjuncta vix longioribus, articulis 9° 10° que transversis (his cum 11° clavam sat distinctam formantibus); pro-

thorace leviter transverso, postice manifeste angustato, supra crebre subfortiter punctulato, utrinque subtiliter unistriato, disco planato tuberculo elongato sat magno instructo, lateribus parum arcuatis, angulis anticis (superne visis) haud bene definitis posticis (superne visis) obtusis sed sursum subdentiformibus ; elytris (certo adspectu) striis dorsalibus 3 (ut *L. ferruginei*, Steph.), impressis, latera versus tenuiter carinatis, interstitiis perspicue punctulatis. Long., $\frac{4}{5}$ l.; lat., $\frac{3}{10}$ l. (fere).

A narrow elongate parallel species resembling *L. murrayensis* in form and proportions and belonging to the same group, but very distinct from it by the much shorter antennæ (at any rate of the female, in which sex the apical three joints form a more evident club than is usual in the genus), the notably stronger and closer puncturation of the pronotum (which, moreover, bears a larger and differently shaped tubercle) and the obtuse (as seen from above) hind angles of the prothorax. These angles, however, are minutely turned up in a subdentiform fashion at their extreme apex, so that if looked at very obliquely from the side—across the insect—they do not appear to be obtuse.

S. Australia (Port Augusta).

L. insignior, sp. nov. Fem. Sat angustus ; modice elongatus ; postice manifeste angustatus ; nitidus ; parum pubescens ; testaceus, elytris (exempli typici) postice infuscatis ; capite quam prothorax vix angustiori, subtilissime punctulato, minus convexo, sat æquali, clypeo antice subtruncato ; antennis sat gracilibus, quam caput prothoraxque conjuncta vix longioribus, sat moniliformibus, articulis 9° haud 10° vix quam latioribus longioribus (his cum 11° clavam manifestam formantibus) ; prothorace parum transverso, postice sat fortiter angustato, supra crebre subtilissime punctulato, utrinque subtiliter unistriato, disco vix planato, lateribus antice modice arcuatis postice subsinuatis, angulis anticis (superne visis) haud bene definitis posticis minutissime dentiformibus, elytris (certo adspectu) striis dorsalibus 3 (ut *L. ferruginei*, Steph.), impressis, latera versus tenuiter carinatis, interstitiis obsolete punctulatis. Long., $\frac{7}{10}$ l.; lat., $\frac{3}{10}$ l. (fere).

This minute species resembles all the preceding in the scarcely marked front angles of its pronotum and the single stria on either side of the same. It is, however, of less parallel form, and its prothorax is very manifestly more narrowed behind and is punctured on its dorsal surface almost as finely and closely as that of *L. ferrugineus*, Steph. It differs also from *L. murrayensis* and *pusulæ* in the even surface of its head and pronotum, from

lindensis by the evidently shorter antennæ—at any rate, of the female—from *parvulus*, Gr., by its shorter prothorax which is not wider than the elytra, from *ferrugineus* by its much smaller size, much narrower build, prothorax less narrowed behind, &c., from *pusillus* by its very much narrower form prothorax narrowed behind, &c.

Victoria, (Dividing Range).

L. pusillus, Schönh. I have four Australian specimens that have been examined by M. Grouvelle—the well-known specialist on this group—and ticketed "*L. pusillus.*" They—and other Australian examples before me of the same species—all have a small shining tubercle about the centre of the disc of the pronotum. This character is not mentioned in Erichson's somewhat lengthy description of the insect (Ins. Deutschl., III., p. 321). I have not Schönherr's original description available. Examples from other parts of the world bearing the same name all present this character.

L. articeps, Olliff. This species is very close to—if not identical with—*L. tasmanicus*, Gr. Olliff's remark on it is "appears to be more nearly allied to *L. tasmanicus* than to any other species," but he adds no mention of the distinctive characters. Both descriptions are fairly full and they agree so exactly in respect of the leading characters—e.g. the remarkable coloring and pattern of the elytra, and the notably strong impression of the fourth elytral stria—that in spite of some little discrepancies in the language employed to characterise the puncturation I can hardly think them founded on two species. I have before me examples from the Victorian mountains (whose Coleopterous fauna is closely allied to that of Tasmania—Grouvelle's locality) and N.S. Wales (which Olliff quotes for *articeps)* which agree in all their strongly marked characters with those set forth in both descriptions. The specimen from N.S. Wales is undoubtedly a trifle less strongly punctulate than the Victorian ones of the same sex—from the descriptions *articeps* appears to be less strongly punctured than *tasmanicus*—but certainly not so markedly as to in itself justify specific distinction. I cannot think it in the least likely that I have before me a species with the same unusual elytral pattern and other strongly marked characters as the specimens that Olliff and Grouvelle described, and yet distinct from them, but undoubtedly my examples present some characters which I cannot understand both those authors passing over without note—for the lateral outline of the prothorax is quite evidently trisinuate and the space on the pronotum intermediate between the lateral stria and the lateral margin bears a deep transverse furrow slightly behind its middle. I may add that one of my specimens was sent to me by Mr. Lea ticketed as "*L. articeps*, Oll."

L. Macleayi, Olliff. This species is practically undescribed. It is the insect on which Macleay founded his genus *Placonotus* —which is in no way different from *Læmophlœus* (as Olliff testified after examining the type). Macleay called his species *longicornis* (a nom. præocc. in *Læmophlœus)* and Olliff renamed it *Macleayi*. Macleay's very brief description is quite worthless, aud would apply to many *Læmophlœi*. Unfortunately Olliff did not describe it, but merely remarked on its resemblance to *L. testaceus*, Fab., and pointed out a few differences (from *testaceus)* so slight that I am convinced it is not really distinct from the insect which Olliff regarded as *testaceus*. But here again there is a further difficulty in Olliff's having given no description whatever of the species that he calls *testaceus*. The only indication he furnishes for the identification of the latter is to be found in his remark that it is common and widely distributed. By means of this clue, however, I feel satisfied that I can identify the *Læmophlœus* to which he applied the name. I have collected the insect in question and received it from other collectors plentifully—its localities ranging from Cairns to Tasmania and Eyre's Peninsula. I cannot think it the species that Erichson (Ins. Deutsch. III., p. 320) describes as *testaceus*, Fab., and which I believe is generally accepted as being correctly identified by him—inasmuch as *inter alia multa* Erichson places first among the characters rendering it "easily recognisable" the presence of a longitudinal impressed line on the head—which line is certainly not present in the Australian insect. The following is a description of the salient characters of the latter:—(as the result of examining numerous specimens); head with its general surface even or almost even—the clypeal suture, however, strongly impressed; antennæ of male not much shorter than the body (of the female considerably shorter) with the basal joint decidedly large—very little indication of a club in either sex; prothorax not strongly transverse, its front angles dentiform, one stria (very much deeper and wider in its hind than in its front half) on either side of the pronotum; very variable in size.

A few of the specimens before me if isolated from the rest might appear to represent species distinct from each other as they differ a little in the development of characters that are sexual—the head being a trifle larger and the antennæ a trifle longer in some males than in others, and the length of the antennæ varying slightly in the females—but after careful examination of a great number of examples I am unable to divide them in any satisfactory manner—for example, of two males certainly taken in company and between which I can find no other distinction one certainly has longer antennæ than the other. If I am right

in regarding this long series as representing but one species it is distinguishable from all the other described Australian *Læmophlœi* (except *rigidus*, Oll., and *difficilis*, Blackb.), of uniform testaceous coloring (or only vaguely clouded with slight infuscation) and having the front angles of the prothorax dentiform, by the sublateral striæ of its pronotum being much stronger in their hind than in their front half. *Rigidus*, Oll. (being quoted as resembling *Beccari*, Gr., in outline) seems to be of decidedly broader form than any of the specimens before me, and the antennæ of the female of *difficilis*, Blackb., seem to me too decidedly shorter and more distinctly clubbed to be treated as the result of mere variety—but I am not very confident that even those two will stand permanently as really good species: If I am right in thinking this widely distributed species distinct from *testaceus*, Fab., it will, I think, have to bear the name *Macleayi*, Oll.

L. Australasiæ, Blackb. This species is extremely distinct from the preceding by *inter alia* the sublateral striæ of its pronotum being dilated behind their middle into a large and deep oval fovea. The coloring of the elytra to which I referred in my original description is not a reliable character as I have recently seen specimens in which the sub-apical infuscation of the elytra is only slightly developed.

L. Frenchi, sp. nov. Mas. Brevis; sat latus; modice depressus; minus nitidus; brevissime sparsim pubescens; nigro-piceus, antennis pedibus scutello macula parva humerali elytrorum apice et in elytrorum disco maculis nonnullis ferrugineis (nonnullorum exemplorum capite et prothoracis disco nonnihil rufescentibus); capite quam prothorax paullo angustiori, confertim subtilissime punctulato, inter antennas late leviter concavo et in medio linea longitudinali subtili impresso; antennis quam corpus haud multo brevioribus, articulis basali quam sequentes 4 vix breviori ad apicem intus fortiter hamato, 2° subglobulo, 3° quam hic sat minori, 3°—7° gradatim paullo longioribus, 8° breviori, 9° quam 8us fere duplo longiori, 9°—11° inter se subæqualibus; prothorace fortiter transverso supra creberrime vix perspicue punctulato, utrinque subtiliter unistriato, inter striam et medium segmentum longitudinaliter leviter concavo, lateribus modice arcuatis, angulis anticis bene determinatis (haud dentiformibus) acutis posticis acute rectis; elytris striis dorsalibus 3 impressis, latera versus carinatis, interstitiis creberrime vix perspicue punctulatis.

Fem. antennis quam corpus multo brevioribus, articulo basali quam sequentes 2 conjuncta breviori, haud hamato. Long., $\frac{4}{5}$ l.; lat., $\frac{3}{10}$ l. (vix).

The great enlargement and distortion of the basal joint of the antennæ in the male distinguishes this species from all other Australian *Læmophlœi* of which the male has been described except *L. diemenensis*, and no other resembles it in colour and markings unless it be *L. Ramsayi*, Oll., which is described as of dark colour with testaceous markings, but its general colour is said to be metallic green with an ante-median elytral testaceous fascia, whereas the present species is blackish with a small humeral spot, two discal postmedian spots and the apex reddish. It is the only Australian *Læmophlœus* that I have seen having the dorsal striæ evidently (from all points of view) only three in number.

Victoria (Dividing Range); also sent by Mr. French.

PLATYCOTYLUS.

P. coloratus, sp. nov. Nitidus; niger; ore antennarum basi pedibusque dilutioribus, elytris macula magna rubra discoidali ornatis; capite crebre sat fortiter punctulato; antennis quam corporis dimidium paullo brevioribus; prothorace quam longiori ut 5 ad 3 latiori, postice angustato, sat fortiter vix crebre punctulato, angulis omnibus dentiformibus, lateribus leviter arcuatis, basi media leviter impressa; scutello fortiter transverso; elytris sat fortiter punctulato-striatis, interstitiis seriatim punctulatis (5° 7° que cariniformibus), sutura pone scutellum concava. Long., $1\frac{4}{5}$ l; lat., $\frac{1}{2}$ l.

Smaller than the typical species (*P. inusitatus*, Oll.) and—judged by Olliff's measurements—of narrower form; also very differently colored, and with much stronger puncturation of the pronotum, which in *P. inusitatus* is said to be "very fine."

Queensland (taken by Mr. Dodd).

LATHROPUS.

I refer to *Lathropus* a small *Cucujid* which I met with under the bark of Eucalyptus on the Victorian Mountains. It has the general appearance of *Læmophlœus*, but differs from it by the short inconspicuous apical spine of its front tibiæ, by its short antennæ with an abruptly clavate apex of three joints and by its tarsi with the basal four joints all very short—the first scarcely visible—and together scarcely half as long as the fifth joint. *Lathropus* is a widely distributed genus, having been recorded from South America as well as Europe (the habitat of the typical species)—possibly also from other places—but it has not been hitherto known as Australian.

L. brightensis, sp. nov. Sat elongatus; modice depressus; modice nitidus; tenuissime sparsim pubescens; testaceo-ferrugineus, elytris circa scutellum et ante apicem infuscatis vel piceis; capite subconvexo quam prothorax angustiori,

crebre sat fortiter punctulato, fronte antice emarginata, sutura clypeali profunda; antennis prothoracis basin haud attingentibus, articulis 1° 2° que incrassatis 3°—8° brevibus parvis 9° 10° que transversis (his cum 11° ovali clavam sat abruptam formantibus); prothorace quam elytra paullo angustiori, quam latiori sublongiori, antice leviter angustato, supra crebre fortiter punctulato, carina mediana longitudinali obsoleta instructa, ante basin impresso, utrinque prope marginem lateralem carina subtili ornato, lateribus leviter arcuatis, angulis omnibus obtusis; elytris striatis, interstitiis hic et illic obtuse convexis sparsim leviter punctulatis. Long., $\frac{4}{5}$ l.; lat., $\frac{3}{10}$ l. (vix).

Victoria (mountains near Bright).

MYRABOLIA.

Species of this genus seem to be numerous in Australia, and are closely allied *inter se*. In this paper I offer descriptions of two new ones and also furnish a table showing the distinctive characters of the hitherto described species. The two described by Reitter (as noted more fully below) are placed in the tabulation by virtue of the characters observed in a specimen (of one of them) named by M. Grouvelle rather than on the characters assigned in the descriptions. If they are not Reitter's species I am convinced that the latter are unknown to me—which is not probable, especially since some of my specimens are from Reitter's locality (Tasmania). The character "dorsal striæ of the elytra doubled" will be found explained below under *M. longicollis*.

TABULATION OF SPECIES OF MYRABOLIA.

A. Dorsal striæ of the elytra doubled.
  B. A dorsal impression (not a mere flattening) on front part of pronotum ... ... *haroldiana*, Reitt.
  BB. No dorsal impression on the pronotum ... *parva*, Blackb.
AA. The striæ of the elytra about 9 in number.
  B. Elytral interstices with a very clearly defined single row of large punctures (scarcely smaller than those of the pronotum) ... *longicornis*, Blackb.
  BB. Puncturation of the interstices much less clearly defined.
    C. Pronotum very finely punctured (scarcely less finely than in *Lœmophlœus pusillus*, Schönh) *lindensis*, Blackb.
    CC. Pronotum considerably less finely punctured.
      D. Prothorax strongly transverse ... ... *grouvelleana*, Reitt.
      DD. Prothorax only feebly transverse ... *longicollis*, Blackb.

M. longicornis, sp. nov. Oblonga; sat convexa; subnitida; subtiliter fulvo pubescens; fusco-ferruginea; capite sat lato, sat fortiter minus crebre punctulato; antennis prothoracem medium excedentibus; prothorace transversim quadrato (latitudine majori parum pone apicem posita), supra ant

medium vix planato, ut caput punctulato, lateribus ante medium subsinuatis, angulis anticis obtusis posticis minute dentiformibus; elytris sat fortiter striatis, striis minus perspicue punctulatis, interstitiis planis fortiter uniseriatim punctulatis. Long., $1\frac{3}{5}$ l.; lat., $\frac{1}{2}$ l. (vix).

This species is easily recognisable by the sculpture of its elytra; the striæ are strong but scarcely visibly punctured, the interstices flat and regular without the slightest trace of striation but with a single row of closely placed very conspicuous punctures which are scarcely smaller than the punctures of the pronotum and are the only conspicuous punctures on the elytra. The antennæ are a little longer than in the other *Myraboliæ* known to me, and the form of the prothorax is distinctive, the sides being slightly sinuate in front of their middle, and at the front of the sinuation the width of the prothorax being quite fully as wide as—to the eye it looks wider than, but by measurement I cannot make it so—at any other part.

Victoria.

M. longicollis, sp. nov. Oblonga; vix depressa; subnitida; subtiliter fulvo-pubescens; fusco-ferruginea; capite minus lato, crebre sat fortiter subrugulose punctulato; antennis minus elongatis; prothorace minus fortiter transverso, supra ante medium vix planato, subfortiter sat crebre nec rugulose punctulato, lateribus sat rectis, angulis anticis obtusis posticis minute vix subdentiformibus; elytris leviter punctulato-striatis, interstitiis uniseriatim subtilius punctulatis externe (certo adspectu) subtiliter vix carinatis (interstitiis 2°—5° certo adspectu subtiliter striatis). Long., $1\frac{1}{5}$ l.; lat., $\frac{2}{5}$ l.

The elytral interstices have a peculiar structure—more or less similar to that of nearly all the other *Myraboliæ* known to me—which is difficult to describe. The space between each two striæ seems to be on a slightly inclined plane so that its external edge is a trifle higher than the other edge and from a certain point of view its external edge looks very finely cariniform—this has some analogy with the structure of the interstices in many *Læmophlœi*. The dorsal interstices moreover have a slight tendency to the peculiar character—well-marked in *M. parva*, Blackb., and in the species that I take to be *haroldiana*, Reitt.—of each bearing a punctulate stria running down its middle which from a certain point of view makes it appear as if there were twice as many dorsal striæ as in the species not possessing this character. Here, however, it is very slight—so slight that in tabulating the species of the genus I have disregarded it. This species differs markedly from all its congeners known to me by its very evidently narrower and less transverse prothorax.

Victoria.

M. grouvelleana, Reitt. I have a specimen of a *Myrabolia* given me by M. Grouvelle, ticketed with the name "*M. grouvelleana*," and quite satisfactorily agreeing with Reitter's generic characters—but if it is rightly named as a *species* Reitter's description is a very poor one. The head and pronotum of the specimen are decidedly strongly punctulate (the individual punctures are hardly smaller than those on the pronotum of *Carpophilus hemipterus*—though they are very much more closely and rugulosely disposed than in that insect)—whereas Reitter calls the head and pronotum "subtiliter punctata" The error is I think more likely to be in Reitter's description than in Grouvelle's determination, but on account of the doubt I have abstained in describing the new species of this memoir from recording their differences from *grouvelleana*.

M. haroldiana, Reitt. Reitter calls the head and pronotum of this species also "subtiliter punctata." In assigning the name to one of the species before me (the only one of them having a dorsal impression on the front part of the pronotum, which Reitter gives as a distinctive character of *haroldiana*) I have taken the term "subtiliter punctata" as implying puncturation similar to that of the species sent by Grouvelle as *grouvelleana*, and note that it is not much different from that which in my descriptions I have called "sat fortis" or "subfortis," and I may add that in my former paper on *Myrabolia* (Tr. R.S., S.A., 1892), I applied the same qualification to Reitter's descriptions. *M. parva*, Blackb. and *lindensis*, Blackb. have considerably finer puncturation of their pronotum than in the specimen named by M. Grouvelle but in other respects they do not at all agree as species with Reitter's descriptions.

CATHARTUS (?).

The following species I refer to *Cathartus* only with hesitation, but I do not think there is any other described genus to which it can be referred and it is certainly very near to that one. I unfortunately cannot refer to the diagnosis of *Cathartus* and have to fall back on a comparison with *C. advena*, Waltl.—which I believe is the type—so that I should not be justified in forming a new genus for the present insect, which does not seem to me to differ from *C. advena* by any characters likely to be generic unless it be that the hind coxæ are somewhat less widely separated—making the ventral projection between them more triangular—and that the tarsi differ somewhat, each of the basal three joints being prolonged on the undersurface—the first feebly, the second decidedly, the third strongly—while in *C. advena* the basal joint does not appear to have any prolongment, the second only a slight one, and the third a strong one. The length of the tars

and proportions of their joints do not seem to differ materially from the same in *C. advena*. The antennæ are very similar to those of *C. advena*, though the second joint is somewhat smaller in proportion to the first and third; the genæ are acute as in *C. advena*, and the prothorax has pronounced anterior angles of the same kind as in that insect (though less strong) its form how ever being more narrowed hindward and the sides being finely crenulate. These particulars will no doubt enable my note to be corrected if I have overlooked any described genus to which this species ought to be referred rather than *Cathartus;* there certainly is no other genus known as Australian in which it could be placed.

C. (?) cairnsensis, sp nov. Sat elongatus; sat angustus; breviter albido-pubescens; rufo-testaceus; capite confertim leviter subrugulose punctulato, æqualiter convexo; prothorace quam latiori vix longiori, supra ut caput punctulato, postice manifeste angustato, in dorso longitudinaliter vix planato, lateribus subsinuatis subtiliter crenulatis, angulis anticis subdentiformibus posticis sat rectis; elytris subtilissime striatis, interstitiis uniseriatim punctulatis (puncturis minus fortiter impressis). Long., 1 l.; lat., $\frac{3}{10}$ l. (vix).

The prothorax is I think very slightly longer than wide, but it is difficult to be quite sure of one's measurements with so very small an insect; to a casual glance it looks decidedly longer than wide. This species is perhaps near *C. rugosus*, Gr. (from New Guinea), but differs from the description of that insect in having its pronotum evenly punctulate, and also (judging from Grouvelle's figure) by its form somewhat narrower and more elongate with its prothorax evidently more elongate and more distinctly narrowed behind. The general character of the sculpture seems to be very similar to that of *C. rugosus*.

N. Queensland (Cairns); given to me by Mr. Koebele.

SILVANUS.

S. brevicornis, Er. The specimen (from Tasmania) that M. Grouvelle sent me ticketed "*Myrabolia grouvelleana*, Reitt." seems to me to be undoubtedly *Silvanus brevicornis*, Er. (also from Tasmania). The insect ought therefore I think, to be called *Myrabolia brevicornis*, Er. I believe this synonymy has not been previously noted.

S. castaneus, Macl. Mr. Lea has been good enough to send me some specimens of a *Silvanus* under this name. If they are correctly named Macleay's species is not distinct from *S. unidentatus*, Fab.

S. aridulus, sp. nov. Modice angustus; sat depressus; subtiliter pubescens; piceo-brunneus, elytris pedibusque nonni-

hil dilutioribus; antennis sat brevibus sat robustis; capite sat plano minus inæquali, pone oculos dentato, supra subtilius confertim punctulato; prothorace quam latiori parum longiori, postice nec antice sat angustato, supra longitudinaliter late leviter biimpresso, confertim leviter punctulato, lateribus obtuse 6-dentatis; elytris obsolete punctulato-striatis, interstitiis 5° 7° 9° que manifeste elevatis (ceteris planis obsolete nec seriatim punctulatis). Long., $1\frac{7}{10}$ l.; lat., $\frac{1}{2}$ l.

Near *S. surinamensis*, Linn. and *congener*, Oll. but differing from both *inter alia* by the inner four interstices of each elytron being perfectly flat, and the striæ and punctures of the elytra being very feeble throughout (becoming a little stronger, however, near the lateral margin). The general form is much wider and the prothorax much less elongate than in *congener*. The size is much larger, and the prothorax is notably wider in front, than in *surinamensis*.

Central Australia (Oodnadatta).

The following table shows the distinctive characters of the *Silvani* known to be Australian :—

A. Elytra with the alternate (or a smaller number of the) interstices evidently more elevated than the others
  B. The inner four interstices of each elytron quite flat ... . *aridulus*, Blackb.
  BB. Interstice three conspicuously elevated.
    C. Sulci of pronotum very wide and shallow (size larger) ... ... *congener*, Olliff.
    CC. Sulci of pronotum notably narrower and deeper (size smaller) .. .. *surinamensis*, Linn.
AA. Interstices of elytra equal (or nearly so) *inter se*.
  B. Prothorax not (or scarcely) longer than wide.
    C. Head dentate behind the eyes ... ... *monticola*, Blackb.
    CC. Head not dentate behind the eyes.
      D. Colour of body entirely black (sides of prothorax not crenulate?) ... ... *atratulus*, Gr.
      DD. Colour of elytra brownish-rufous (sides of prothorax strongly crenulate) ... *armatulus*. Blackb.
  BB.* Prothorax conspicuously longer than wide ... *unidentatus*, Fab.

CRYPTAMORPHA.

C. optata, Oll. This species was described on a specimen from Tasmania—a locality from which I have not seen any *Cryptamorpha*. I do not think it is identical with any of those I have described though it is perhaps near *Macleayi*, Blackb. But *inter alia* Olliff says of its head "coriaceous" implying that there is no distinct puncturation, whereas the head of *Macleayi* bears numerous not very strongly impressed isolated punctures; nor do I find that the interstices of the elytra are particularly

* *S. castaneus*, Macl., if a valid species, must be placed here.

narrow as compared with those of other *Cryptamorphæ*, as Olliff seems to imply they are in *optata*.

C. *triguttata*, Waterh. In the description of this species, as in that of *C. optata*, Oll., the sculpture of the head is characterised by the word "*coriaceous*" without reference to their being any distinct punctures, with which no *Cryptamorpha* known to me agrees. Several species before me have the surface of the head more or less coriaceous, but there is in all of them a well defined system of larger punctures on the coriaceous surface. *C. triguttata* is said to have "an elongate spot on the suture of the elytra near the apex," which I cannot find in any of the specimens before me —whatever postmedian dark mark there is near the apex being always an ill-defined transverse fascia, which is more or less traceable in almost all the *Cryptamorphæ* that I have seen and is not, I think, specific—specimens where it is wanting being mere varieties. Waterhouse's species is described from S Australia—from which locality I have seen many examples of *Cryptamorpha* —and I find it difficult to believe that I have not seen either *optata* or *triguttata*, but I am obliged to consider that such is the case.

C. peregrina, sp. nov. Sat elongata; sat angusta; sat nitida; pilis longis erectis sparsim vestita; rufo-ferruginea, in pronoti (hoc nonnihil cupreo) lateribus et in elytris indeterminate obscuriore, capite haud coriaceo, crebre fortiter punctulato, utrinque bistriato, striis sat parallelis, externa minus perspicua juxta oculum, interna integra subtili sed bene definita; prothorace vix transverso, postice sat angustato, subtilius aspere confluenter punctulato, lateribus sat æqualiter vix arcuatis denticulis setiferis circiter 6 armatis (majoribus 2 ad angulum anticum, 1 ad angulum posticum, ceteris minutis); elytris sat grosse punctulato-striatis, interstitiis planis subtiliter punctulatis. Long., $1\frac{2}{5}$ l.; lat., $\frac{2}{5}$ l.

The subnitid surface and deep close puncturation of the head associate this species with *C. Victoriæ*, Blackb., and *C. delicatula*, Blackb. The former is much larger with *inter alia* its prothorax —not narrowed hindward from close to the apex, as in this species but—narrowed only close to the base and with its lateral denticulations all minute and subequal. *C. delicatula* is very close to this species but has *inter alia* a more decidedly transverse prothorax and (especially) the puncturation of its head considerably finer and closer and asperate.

N.S. Wales (Blue Mountains).

PSAMMŒCUS.

No species really attributable to this genus has hitherto been to my knowledge recorded as Australian. *Psammœci*, however, seem to be fairly numerous in tropical Queensland. The follow-

ing four species were taken by Mr. Koebele in the Cairns district. They seem distinct from all their somewhat numerous congeners that have been described as occurring in New Guinea, &c.

P. incertior, sp. nov. Sat brevis; sat latus; testaceo-ferrugineus, antennarum articulis 9° 10° que prothorace et maculis 5 in elytris (dorsalibus magnis submedianis 2, suturali communi 1 postmediana, his anguste conjunctis, humeralibus 2) nigris vel piceis; nonnullorum exemplorum varie prothorace minus vel haud infuscato, maculis suturali humeralibusque carentibus, maculis dorsalibus minoribus, notularum colore minus determinatis; antennis corporis dimidium vix excedentibus; oculis capitis basin attingentibus; capite utrinque antice breviter minus perspicue impresso, cum pronoto grosse crebre rugulose punctulato; hoc fortiter transverso, ad basin fere ab apice angustato, lateribus leviter arcuatis denticulis setiferis circiter 8 (his parvis inter se sat æqualibus) armatis; elytris quam prothorax multo latioribus, grosse punctulato-striatis, interstitiis sat perspicue transversim rugatis; corpore pilis sat longis suberectis vestito. Long., $1\frac{1}{2}$ l.; lat., $\frac{2}{3}$ l. (vix).

An extremely variable species in respect of colouring. In some specimens the elytral dark marks are extremely similar to those of a well marked example of the European *P. bipunctatus*, Fab. The discoidal dark spot on the elytra is present in all the specimens before me, though in some it is smaller and of lighter colour than in others. In a fully marked specimen the shoulders are black, the discoidal spots are very large, the sutural spot is smaller but very dark and all the spots except the humeral ones are narrowly connected. In one specimen the three hind spots of the elytra are all present but are very small and not much darker than the general surface and are all narrowly connected as in a dark specimen.

N. Queensland (Cairns). Mr. Koebele.

P. T-notatus, sp. nov. Sat brevis; sat latus; pilis sat longis suberectis vestitus; ferrugineus, antennarum articulis 7°—10° (vel 8°—10°) prothoracis lateribus elytrorum basi et in his notula communi (hac partem dimidiam apicalem occupante) literam T simulante nigropiceis; antennis corporis dimidium manifeste excedentibus; oculis capitis basin vix attingentibus; capite fere æquali, fortiter sat crebre vix grosse haud rugulose punctulato; prothorace fortiter transverso, arcuatim fere ab apice ad basin sat fortiter angustato, quam caput paullo magis crebre punctulato, lateribus dentibus 5 (his ab apice retrorsum gradatim majoribus, posticis 2 magnis spini-

formibus) armatis ; elytris quam prothorax multo latioribus, fortiter punctulato-striatis, interstitiis planis perspicue seriatim punctulatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{2}{3}$ l.

The coloring, especially the conspicuous common T-like mark on the elytra, in combination with the comparatively large spiniform teeth on the hinder part of the lateral margin of the prothorax, makes this species easy to recognise.

N. Queensland (Cairns). Mr. Koebele.

P. upsilon, sp. nov. Sat brevis ; sat latus ; pilis sat longis suberectis vestitus ; testaceus, antennarum articulis 7°—10° et in elytris notula communi (hac partem dimidiam apicalem occupante) literam upsilon simulante nigropiceis ; antennis corporis dimidium manifeste excedentibus ; oculis capitis basin attingentibus ; capite ut *P. T-notati ;* prothorace valde transverso, arcuatim fere ab apice ad basin minus fortiter angustato, trans basin perspicue depresso, ut caput punctulato, lateribus dentibus circiter 6 (ex his anterioribus minutis posterioribus paullo majoribus) armatis ; elytris quam prothorax sat latioribus, ut præcedentis *(T-notati)* sculpturatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{2}{3}$ l.

The whole surface of the body is testaceous except a common blackish spot on the hind half of the elytra which forms a very sharply defined and perfect representation of the Greek letter upsilon (capital). Apart from the markings this species differs from the preceding very conspicuously by its wider prothorax—less narrowed behind—having a very distinct depression across the base with the lateral projections smaller and more numerous. The eyes also seem to attain the base of the head a trifle more exactly. The part behind the head is in reality *neck* in both, but where it is visible through undue protruding of the head from the prothorax its sides converge hindward somewhat in *T-notatus* and are parallel in *upsilon.* This, however, is a slight and inconspicuous character.

N. Queensland (Cairns). Mr. Koebele.

P. vittifera, sp. nov. Minus brevis ; minus latus ; pilis minus elongatis vestitus ; testaceo-brunneus, elytris vitta (hac ab humero ultra medium extensa) postice intus dilatata et sutura in parte apicali tertia piceis ornatis, antennarum (exempli typici) articulis apicalibus carentibus ; oculis capitis basin attingentibus ; capite sat æquali crebre fortiter punctulato ; prothorace sat transverso, arcuatim fere ab apice ad basin sat fortiter angustato, confertim subfortiter subrugulose punctulato, lateribus denticulis setiferis circiter 8 minutis (his inter se sat æqualibus) armatis ; elytris quam prothorax sat latioribus, ut *P. T-notati* sculpturatis. Long., $1\frac{2}{3}$ l.; lat., $\frac{1}{2}$ l.

I have seen only a single specimen—which has unfortunately lost the greater part of its antennæ—of this species, but as it is very distinct from any other *Psammœcus* that I can ascertain to have been described, I have no hesitation in naming it. The markings of its elytra are of quite a different type from those of the preceding three species, and the structure of its prothorax is very distinct. The lateral denticulations of that segment are somewhat like those of *P. incertior* (though more minute—one or two of them a trifle larger than the rest—especially the hindmost), but its surface is very much more closely and less coarsely punctulate. From the other two species described above the very different inequalities of the sides of its prothorax *inter alia* separate it very widely.

N. Queensland (Cairns). Mr. Koebele.

CRYPTOPHAGIDÆ.

CRYPTOPHAGUS.

C. nigro-apicalis, sp. nov. Brevis; sat parallelus; modice convexus; pubescens; ferrugineus, prothorace infuscato, elytris apicem versus nigricantibus; antennis minus robustis, articulis 9° 10° que fortiter transversis (hoc quam ille nonnihil longiori nonnihil latiori); capite pronotoque crebre fortiter subrugulose punctulatis; hoc fortiter transverso, ante scutellum utrinque impresso, lateribus ad angulum anticum extrorsum dilatatis hinc ad basin rectis; elytris fortiter sparsius punctulatis. Long., $\frac{4}{5}$ l.; lat., $\frac{3}{10}$ l.

I have only a single specimen of this insect and therefore cannot state positively that its male has heteromerous tarsi, but in other respects and in facies it seems to agree with *Cryptophagus*.

Victoria.

DIPHYLLUS.

It is interesting to find this genus in Australia. The species described below is evidently a member of it.

D. ornatellus, sp. nov. Ovalis; sat nitidus; pube sat longa erecta vestitus; piceo-brunneus, antennis pedibus elytrisque livide testaceo-brunneis, his nigro-piceo-variegatis; capite sat æquali fortiter sat crebre punctulato; antennis minus robustis modice elongatis, clava bi-articulata (hujus articulo basali quam alter paullo latiori); prothorace fortiter transverso, antice paullo angustato, supra fere ut caput punctulato, utrinque carina integra submarginali instructo, lateribus minus arcuatis, angulis anticis sat prominentibus posticis sat rectis; elytris obsolete striatis, striis fortiter punctulatis, interstitiis confertim subtilissime punctulatis. Long., 1 l.; lat., $\frac{1}{2}$ l. (vix).

The dark markings on the elytra are moderately sharply defined and probably variable. In the type they consist of *(a)* a common mark on the hinder half roughly resembling the letter T, *(b)* a transversely quadrate blotch just touching the upper extremity of each arm of the T and reaching the lateral margin, *(c)* a subhumeral blotch similar to (*b*) which from each extremity emits a narrow branch connecting with the corresponding extremities of (*b*). Compared with the European *D. lunatus*, Fab., this species is much smaller, with the antennæ a little longer and less stout, the surface evidently more nitid, the sculpture not much differing but with the sublateral carina of the pronotum a little nearer to the lateral margin and the rows of punctures on the elytra placed in shallower striæ, and the colors and markings very different.

Victoria (under bark of *Eucalyptus;* Dividing Range).

DIPLOCŒLUS.

D. (*Triphyllus*) *fasciatus*, Macl. Mr. Lea has been good enough to send me an example of this insect compared with the type. It agrees well with the description and is certainly a *Diplocœlus*. This correction has not to my knowledge been previously noted definitely, although Mr. Lea in one of his papers mentions *D. fasciatus*—without an author's name—and thereby probably indicates his knowledge that Macleay's species is a *Diplocœlus*.

D. ovatus, Macl., *piliger*, Reitt., and *punctatus*, Lea, must be extremely close *inter se* and are probably identical. Macleay's is the earliest of the names. Reitter says that he has not seen Macleay's description, and Lea does not refer to either *ovatus* or *piliger*. They all describe a species notable for its long erect pubescence and strongly punctulate-striate elytra. I cannot find anything in the descriptions inconsistent with their being all one species, although if that be the case Macleay described a very small specimen—yet not indicative of much greater variation in size than I find in *D. angustulus*, Blackb. Reitter thinks that the name "*ovatus*" is inconsistent with identity with his species, which is "ovalis" in form—but on referring to the description I find that Macleay gives the form as "oval" in spite of the name. These insects—whatever number of species they represent—all differ from the other described Australian *Diplocœli* as follows:—from *fasciatus*, Macl., by their unicolorous elytra; from *Leai*, Blackb., by their very much smaller size; from *angustulus*, Blackb., by their much less narrow and less parallel form; and from *exiguus*, Blackb., and the new species described below by their much stronger elytral sculpture and longer pubescence. Mr. Lea has kindly given me a specimen of his *D. punctatus;* the other two—if they are distinct from it—I have not seen.

D. opacior, sp. nov. Sat longe ovalis; pube sat brevi erecta vestitus; ferrugineus; prothorace transversim subquadrato, sat nitido, sparsim inæqualiter leviter punctulato, supra inæquali, utrinque intra marginem sat fortiter bicostato; elytris subopacis, subtiliter striatis, striis subtiliter leviter (ultra medium vix manifeste) punctulatis, interstitiis planis coriaceis; segmento ventrali basali in medio oblique bistriato; antennarum clavæ articulo basali quam 2us paullo angustiori. Long., 1 l.; lat., $\frac{2}{5}$ l. (vix).

Of described Australian *Diplocœli* this species is nearest to *D. exiguus*, Blackb. which it resembles in colour size and outline, differing, however, *inter alia* in the uneven surface of its pronotum, in the shallower and much less regular puncturation of the same, and in the much feebler sculpture of the elytra, on which the seriate punctures are fine and faintly impressed even in the front part and become very much more so from a little behind the middle. The inequalities of the pronotum consist of a shallow ill-defined concavity (not much more than a flattening) on the hinder two-thirds of the disc, and a large better-defined round fovea on either side of the concave space and a little in front of the base.

Victoria (Glenelg R.); under bark of Eucalyptus.

TABULATION OF THE DESCRIBED AUSTRALIAN DIPLOCŒLI.

A. Size very large ($3\frac{1}{2}$ l.) ... ... *Leai*, Blackb.
AA. Size much smaller.
B. Elytra bicolorous ... ... *fasciatus*, Macl.
BB. Elytra unicolorous.
*C. Form broader than in the other described species ... ... *latus*, Lea
CC. Form very narrow and elongate (not unlike that of *Lyctus brunneus*, Steph.) ... *angustulus*, Blackb.
CCC. Form oval
D. Upper surface clothed with long erect pubescence; elytra very strongly punctulate ... ... *ovatus*, Macl. / *piliger*, Reitt. / *punctatus*, Lea.
DD. Pubescence much shorter; punctures of elytra much feebler
E. Surface of pronotum even ... ... *exiguus*, Blackb.
EE. Surface of pronotum very uneven ... *opacior*, Blackb.

TELMATOPHILUS.

T. sublautus, sp. nov. Elongato-ovatus; modice convexus; nitidus; setis subtilissimis parum manifestis sparsim vestitus; rufo-testaceus, antennarum articulis 9° 10° que et in elytris notulis indeterminatis 3 (his basali, mediana et anteapicali) picescentibus; capite convexo sat æquali sparsissime fortiter punctulato; prothorace transverso, antice quam trans basin sat angustiori, ad basin late sublobato, ante basin

*This character is inferred from Mr. Lea's description; I have not to my knowledge seen the insect.

transversim sulcato et utrinque foveolato, sparsim fortiter punctulato, lateribus ab angulis anticis ad medium divergentibus (hic angulatis, hinc ad basin subsinuatim convergentibus), angulis anticis obtusis posticis sat rectis; elytris vix striatis, seriatim punctulatis, puncturis suturam versus modicis (extrorsus gradatim magis grossis), interstitiis lævibus; antennis quam corporis dimidium paullo brevioribus, articulis basali suborbiculari 2° brevi 3° quam 2us angustiori fere duplo longiori 4°—8° brevibus 9° 10° que transversis sat magnis 11° obovato quam 10° paullo longiori; prosterno inter coxas minus lato, utrinque brevissime elevato; metasterno ad latera grosse sparsim punctulato; tarsis sat elongatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{1}{2}$ l.

This species is clearly congeneric with *T. Sharpi*, Blackb., which Dr. Sharp considered congeneric with his *Telmatophilus nitens* —from New Zealand. The only structural differences that I notice are the tarsi somewhat longer and more slender and the prosternum a little narrower between the coxæ. The infuscation of the elytra is diffused about the base and forms a vague fascia at the middle – much dilated on the lateral margin—and a dark cloud filling the apex. It is probable, however, that the markings are more or less variable; in the type they have a somewhat washed-out appearance. The eyes are a little less coarsely granulate than in *T. Sharpi*.

Victoria.

DERMESTIDÆ.

This family is very numerously represented in Australia, chiefly by very small species. It seems desirable, as some of the species that have been attributed to the older genera cannot be regarded as typical members of the same, to preface the following notes with a tabulated statement of the characters that I have regarded as governing the apportionment of the species to the various genera.

A. No ocellus on the forehead ... ... *Dermestes*
AA. An ocellus on the forehead.
  B. The mesosternum narrow ... ... *Megatomx*
  BB. The mesosternum wide, emarginate in front.
    C. Femora and tibiæ strongly compressed
      D. Basal joint of tarsi very short ... ... *Brachysphyrus*
      DD. Basal joint of tarsi much longer than second joint ... ... *Adelaidea.*
    CC. Femora and tibiæ normal.
      D. Vestiture consisting of hairs
        E. Sternal cavities lateral, sulciform ... *Trogoderma*
        EE. Sternal cavities anterior, foveiform (antennal club 2-jointed) ... ... *Cryptorhopalum (1st section)*
        EEE. Sternal cavities anterior, transversely sulciform (antennal club with more than 2 joints) ... ... *Cryptorhopalum (2nd section)*
      DD. Vestiture consisting of scales ... ... *Anthrenus*

DERMESTES.

D. australis, Macl. Judged by the description this name may be confidently regarded as a synonym of the introduced *D. vulpinus*, Fabr. There seems to be no sufficient evidence of the occurrence of *Dermestes* in Australia except by accidental importation. I am not aware of this synonymy having been previously reported.

BRACHYSPHYRUS (gen. nov.).

Caput ocello instructum; palpi maxillares subcylindrici, articulo apicali quam præcedens sat longiori; antennæ breves, 11-articulatæ, articulis 1° 2° que subglobosis quam sequentes multo majoribus 3°—8° minutis 9°—11° (exempli typici) clavam formantibus (hac quam articuli ceteri conjuncti vix breviori, articulis 9° 10° que fortiter transversis, 11° quam 9us 10us que conjuncti vix breviori); oculi modici ovales; prothorax antice angustatus, postice lobatus; elytra postice singulatim rotundata, pygidium haud tegentia; prosternum medium carina longitudinali integra instructum, utrinque longe intra marginem lateralem fovea sat magna impressum; mesosternum latum antice processum prosternalem recipiens; femora lata subtus sulcata; tibiæ compressæ latæ extus spinulis parvis validis ciliatæ; tarsi modici, articulo basali minuto quam 2us multo breviori; coxæ anticæ permagnæ, prosterni marginem anteriorem fere attingentes; corpus pubescens.

The very large front coxæ, the position of the prosternal impressions (widely separated from the lateral margins of the segment), the very wide femora and tibiæ and the very small basal joints, are all unusual characters in the *Dermestidæ*. The narrow subcariniform interspace between the front coxæ is of similar structure to the same part in *Trogoderma*, &c., but the coxæ themselves nearly reaching the front margin of the segment, it also is similarly prolonged.

B. irroratus, sp. nov. Latissimus, fere subcircularis; subnitidus; nigro-piceus pube subtili minus perspicua fulva vestitus et maculis numerosis (his e pilis longioribus niveis formatis) irroratus, antennis pedibusque ferrugineis; supra crebre subtilius punctulatus; subtus pilis sat longis castaneis crebre vestitus. Long, 1½ l.; lat., 1 l.

The structural characters have been so fully specified above in the diagnosis of the genus that it seems unnecessary to repeat them here.

N. Queensland; Cairns (given to me by Mr. Koebele).

MEGATOMA.

I have before me an example from N. Queensland which must be referred to this genus. It is undoubtedly very close to *M. tenuifasciata*, Reitt., which appears to be the only Australian *Megatoma* hitherto described. The only objection I find to its identity with Reitter's species consists in its narrow elytral fascia being of zig-zag form, whereas Reitter calls it "Subrecta." This points to the probability of its being a distinct species—a probability increased by the remoteness from Queensland of Tasmania (Reitter's locality). Unfortunately my specimen is not in sufficiently good condition for me to be able to describe it satisfactorily.

TROGODERMA.

To a casual glance most of the Australian species of this genus appear scarcely distinguishable *inter se*, but a careful examination of their structure shows them to possess particulary satisfactory differential characters—chiefly in the antennæ and the prosternal sulci. I have found the latter to be the organs on which it is most convenient to base the primary divisions of the genus. These sulci are cavities for the reception of the antennæ in repose and always run the whole length of the prosternum immediately within its lateral margin on either side. Consequently the variations in the form of the sulci result from the nature of their *inner* and *hind* margins. In what seems to me the most highly developed form the sulci are very deep and narrow, the inner margin strongly defined and running obliquely from close to the inner margin of the eye to the hind angle of the prosternum where it meets the outer wall of the sulcus and closes its cavity. *T. Adelaidæ*, Blackb., and *varipes*, Blackb., furnish typical instances of the above form of sulcus. The development of the sulci however degenerates by their becoming wider, shallower, and less sharply limited. In some species (e.g. *apicipenne*, Reitter) the form of the sulci differs from that of the *Adelaidæ* group by their inner margin being in its front half nearly parallel to their outer margin and in its hind half (only) running obliquely across to join the outer margin at the hind angle of the prosternum. In other species, again (e.g. *difficile*, Blackb., and *lindense*, Blackb.), the inner margin of the sulcus reaches the basal margin of the prosternum at a point between the middle of the prosternum and the hind angle of the segment, the *basal margin* closing the sulcus by being slightly elevated, and finally there are species (e.g. *morio* and *maurulum*, Blackb.) in which the hind margin of the prosternum is not at all elevated, and consequently the hind end of the sulcus is open.

In my former notices of *Trogoderma* I have apportioned the species into primary divisions according as the sulci are open or

closed behind—calling all those sulci which are closed behind "sharply defined, deep," &c., without specifying more exact particulars. The study of more specimens and species has led me to the conclusion that such a classification is not satisfactory as it places in the first division one species *(lindense)* whose prosternal sulci are really more like those of the second division (because—and I think the observation was correct—its sulci are finely closed along their hind margin). This character however, it is very difficult to be certain about unless a specimen is available for dissection, and therefore I now regard the species as grouped according to whether the inner margin of the sulcus ends on the hind margin of the prosternum at a distance from the hind end of the outer margin or ends *in contact with* the outer margin. This renders it neceseary to remove *lindense* from the first to the second group.

I observe, in all the Australian *Trogodermata* that I have examined, that the basal ventral segment has an oblique stria on either side not unlike those which are found in *Diplocœlus*. I do not find this character referred to in any diagnosis that I possess of *Trogoderma*, and am not able to say whether it is present in *Trogodermata* from other countries than Australia.

Tabulation of the Australian Trogodermata.

A. Elytra covering the hind body—not separately rounded at the apex.
  B. The inner margin of the prosternal sulci ends in contact with the outer margin.
    C. Elytra with erect comparatively long pilosity.
      D. Elytra with an antemedian red fascia ... *Froggatti*, Blackb.
      DD. Elytra with a red humeral spot ... *Reitteri*, Blackb.
      DDD. Elytra without defined antemedian red markings.
        E. General colour of elytra red.
          F. Antennal club of male eight-jointed and strongly pectinate ... ... *Macleayi*, Blackb.
          FF. Antennal club of male six-jointed and strongly serrate ... ... *tolarnense*, Blackb.
        EE. General colour of elytra black or dark piceous.
          F. Club of antennæ serrate (possibly pectinate in the unknown males).
            G. Club of antennæ of dark colour.
              H. First joint of antennal club in female very small and very strongly transverse ... ... *alpicola*, Blackb.
              HH. First joint of antennal club in female notably larger and less transverse ... ... *apicipennis*, Reitt.
            GG. Antennæ entirely testaceous ... *baldiense*, Blackb.
          *FF. Club of antennæ not serrate.
            G. Stipes of antennæ testaceous.
              H. Puncturation of disc of pronotum comparatively sparse.

I. Joints 9 and 10 of antennæ scarcely transverse in male (female unknown) ... ... *eyrense*, Blackb.
II. Joints 9 and 10 of antennæ strongly transverse in both sexes ... ... *debilius*, Blackb.
HH. Puncturation of disc of pronotum very close ... ... *Adelaidæ*, Blackb.
GG. Antennæ entirely black ... *varipes*, Blackb.
CC. Elytra devoid of erect pilosity ... ... *exsul*, Blackb.
BB. The inner margin of the prosternal sulci ends on the hind margin of the prosternum.
C. Elytra with a clearly defined testaceous antemedian fascia ... ... *longius*, Blackb.
CC. Elytra devoid of antemedian markings.
D. Antennæ and legs testaceous.
E. Form normally wide and oval.
F. Pronotum comparativeiy widely margined (size large)... ... ... *yorkense*, Blackb.
FF. Pronotum very narrowly margined (size very small) ... ... *lindense*, Blackb.
EE. Form extremely narrow and elongate . *singulare*, Blackb.
DD. Antennæ with at least the club dark.
E. Puncturation of disc of pronotum extremely sparse ... ... *difficile*, Blackb.
EE. Puncturation of disc of pronotum close.
F. Puncturation of elytra exremely close (almost confluent) ... ... *Meyricki*, Blackb.
FF. Puncturation of elytra much less close.
G. Antennal club of male eight-jointed.
H. Antennal club of female six-jointed ... ... *maurulum*, Blackb.
HH. Antennal club of female five-jointed ... ... *morio*, Er.
GG. Antennal club of male seven-jointed *antipodum*, Blackb.
AA. Elytra separately rounded, not covering hind body ... ... *occidentale*, Blackb.

T. tolarnense, sp. nov. Sat latum; sat parallelum; modice nitidum; supra pilis brevibus erectis vestitum; nigrum, elytris (his fusco-adumbratis) antennis pedibusque rufis; prothorace fortiter transverso, antice angustato, supra subfortiter sat crebre punctulato, angulis posticis retrorsum directis haud acutis; elytris sat crebre fortius punctulatis; metasterno antice lato subtruncato, prosterni sulcis latis profundis bene determinatis postice leviter clausis.

Maris antennarum clava 6-articulata, fortiter serrata. Long., 2 l.; lat., 1 l. (vix).

The red-brown elytra clouded with fuscous together with the entirely (except the basal joint) rufo-testaceous colour of the antennæ and their very strongly serrate six-jointed club render

*The male of *T. exsul*, Blackb., is not known but I feel sure that the club of its antennæ is not serrate.

the male of this insect—of which I have not seen the female—very distinct. The great width of its prosternal sulci and its serrate antennæ associate it with *T. Macleayi*, Blackb., which differs from it *inter alia* by the club of its antennæ in the male being—not merely serrate but—strongly pectinate, and eight-jointed.

N.S. Wales; Tolarno. Sent to me by Miss Carnie.

T. exsul, sp. nov. Late ovale; sat nitidum; supra pube subtili fulva depressa vestitum; nigrum, elytris versus apicem antennis (clava excepta) pedibusque rufo-testaceis; prothorace fortiter transverso, antice angustato, supra sat crebre minus subtiliter nec profunde punctulato, angulis posticis retrorsum leviter directis haud acutis; elytris crebre subfortiter punctulatis; metasterno antice lato, late rotundato; prosterni sulcis profundis, bene determinatis, postice clausis.

Feminæ antennarum clava 3-articulata. Long., 1 l.; lat., $\frac{1}{2}$ l. (vix).

Although I have not been able to examine the male of this species, I have no hesitation in describing it, inasmuch as its vestiture—fine depressed fulvous pubescence—renders it extremely distinct among the Australian *Trogodermata*.

Central Australia.

T. debilius, sp. nov. Sat late ovale; sat nitidum; supra pilis brevibus erectis vestitum; nigrum, palpis tarsis et antennarum stipite testaceis, harum clava picescenti, elytris postice nonnihil rufescentibus; antennarum articulis 8°—10° sat transversis; prothorace valde transverso, antice angustato, supra sat leviter minus crebre punctulato, angulis posticis retrorsum directis sat acutis; elytris crebre sat fortiter punctulatis; metasterno antice lato, inter coxas intermedias late rotundato; prosterni sulcis profundis, bene determinatis, postice clausis.

Maris antennarum clava 5-articulata, articulis 8°—10° sat transversis nec quam longioribus duplo latioribus.

Feminæ antennarum clava 5 articulata quam maris multo breviori (præsertim articulo ultimo), articulis 8°—10° quam longioribus fere duplo latioribus. Long., $1\frac{2}{5}$ l.; lat., $\frac{4}{5}$ l.

The club of the antennæ in the male is very evidently longer than all the other joints together, in the female a little shorter than the other joints together. Among the species resembling this one in the form of their prosternal sulci and in their antennal club being black or nearly so in contrast with the testaceous stipes (which seems to be a perfectly reliable specific character) it is distinguished by the joints 8—10 of its antennæ being not so

excessively transverse as in *alpicola*, Blackb.; by its pronotum very evidently more feebly and sparsely punctulate than in *Adelaidæ*, Blackb., and by its size notably smaller, its form very much less parallel, its tibiæ and antennal club much more deeply black in colour and its elytra much less extensively rufescent towards the apex than in *eyrense*, Blackb.

W. Australia; Champion Bay (from Mr. E. Meyrick).

T. longius, sp. nov. Elongato-ovale; sat nitidum; supra pilis erectis vestitum; nigrum, elytris fasciis 2 testaceis (altera antemediana angulata, altera subapicali obliqua) ornatis, antennis (clava vix infuscata excepta) testaceis, pedibus plus minusve rufescentibus; prothorace fortiter transverso, antice angustato, in disco sparsissime (latera versus magis crebre) subtilius punctulato, angulis posticis retrorsum modice productis acutis; elytris leviter sat crebre minus subtiliter punctulatis; metasterno antice sat lato late rotundato; prosterni sulcis latis, modice profundis, male determinatis, postice apertis.

Feminæ (?) antennarum clava angusta, 4 articulata. Long, 1 l.; lat., $\frac{1}{2}$ l. (vix).

This species is a very distinct one. It is the only *Trogoderma* known to me having a well defined coloured pattern on the elytra in combination with prosternal sulci open behind. The pilosity on the testaceous parts of the elytra is of testaceous colour, and there is also some thin whitish pilosity on the pronotum.

Victoria (Glenelg R.) and Tasmania.

T. lindense, Blackb. See notes on this species in the general remarks (above) on *Trogoderma*.

T. maurulum, sp. nov. Sat elongatum; sat nitidum; supra pilis brevibus erectis vestitum; nigrum, palpis tarsis et antennarum stipite testaceis; antennarum articulis 8°—10° valde transversis, quam longioribus duplo latioribus; prothorace fortiter transverso, antice angustato, supra crebre subfortiter punctulato, angulis posticis retrorsum directis sat acutis; elytris minus crebre sat fortiter punctulatis; metasterno antice minus lato, inter coxas intermedias angulato; prosterni sulcis male determinatis, postice apertis.

Maris antennarum clava 8-articulata; feminæ 6-articulata. Long., $1\frac{2}{5}$ l.; lat., $\frac{3}{5}$ l. (vix).

In some examples the tibiæ are piceous rather than black, and the knees even rufescent. The most distinctive character of this species and the next is the eight-jointed antennal club of the male. To a casual glance the antennæ seem to be all club, but on close examination it is seen that there is a single very small

testaceous joint—forming what I have called the *stipes*—between the two normally large basal joints—which may be said to form the scape of the antenna, the second of which is of testaceous colour—and the club. In the female the dilated joints (of black colour) forming the club begin with the sixth joint and the stipes consists of three testaceous joints—the second joint of the antennæ being also testaceous as in the male.

Victoria; Glenelg R. district.

T. (Megatoma) morio, Er. Reitter discusses this species in Verh. Ver. Brünn. (1881, p. 36) and is disposed to identify it with a *Trogoderma* that he had examined, and which he said agreed very well with Erickson's description except in being somewhat smaller than the size given for the type. As Erickson does not supply information regarding the structural characters of his species, his description would fit several species that are before me, but I have little doubt that one or other of them is *morio;* and as one of them is from Tasmania (Erickson's locality) I have no hesitation in fixing upon it to bear the name. It is extremely close to *T. maurulum*, Blackb., differing chiefly in the antennal character of the female. In the female of *maurulum* joints 2—5 are testaceous, 3 very evidently longer than 4, 4 a trifle longer than 5, 3—5 form the stipes, 6—11 are black and form the club. In *morio* joints 2—6 are testaceous, 3 if anything shorter than 4, 4 and 5 successively slightly shorter, 3—6 form the stipes, 7—11 are (not black but) reddish piceous and form the club. *T. morio* is a little narrower than *maurulum* with its sides straighter and more parallel.

THAUMAGLOSSA.

One species (*concavifrons*, Reitt.) has been doubtfully attributed by its author to Tasmania. He says of it "vaterland fraglich" and then suggests that it may be Tasmanian. It is an insect of black colour with some parts—including the head—red, the forehead deeply concave, and is unknown to me. The genus however occurs in Australia undoubtedly as a *Dermestid* now before me—from Queensland and N.S. Wales, and which agrees well with the description of *Anthrenus nigricans*, Macl.—is a member of it. Its ten-jointed antennæ in combination with cylindric tibiæ, elongate basal joint of the tarsi, toothed claws, and elytra separately rounded at the apex render it easy to identify. There is a very strong oblique stria on either side of the median part of the basal ventral segment.

CRYPTORHOPALUM.

The Australian *Dermestidæ* that have been attributed to this genus appear to me to represent two distinct genera. Reitter's descriptions of the three species that he attributed to the genus

unfortunately contain no information regarding the structure of the antennæ and of the prosternal sulci, without which it is impossible to identify with certainty the insects on which his descriptions were founded. I have before me, however, three species—from the localities cited in his memoir—which agree so well with his very full account of superficial characters that I regard their determination as not far short of certain. They, however, are decidedly not typical *Cryptorhopala*. Reitter says in a note that two of his species are superficially more like *Trogodermata* but he adds that their antennæ and antennal furrows are accordant with *Cryptorhopalum*. This seems unfavorable for my identification but does not change my opinion. The specimens that I identify with the two species referred to—*variabile*, Reitt., and *Erichsoni*, Reitt.—are of *Trogoderma* facies but their antennæ and antennal furrows are not those of typical species of either *Trogoderma* or *Cryptorhopalum*, but are like those of *Anthrenus*—i.e. the antennæ have their club less compact and more elongate than in *Cryptorhopalum*, and are received in sharply cut furrows placed transversly along the front margin of the prosternum. I am therefore of opinion that Reitter was incorrect in his observation of the antennal characters of these insects. I have no doubt that Reitter's three species belong to a genus not yet recorded—at any rate as Australian—but inasmuch as I am not sure that the genus may not have been described on examples from some other country—and many *Dermestid* genera are of extremely wide distribution—I do not propose a new name for it, but shall treat it for the present as a section of *Cryptorhopalum*. The Australian species of the genus hitherto described whose antennæ and prosternal sulci are typical are *australicum*, Blackb., *Woodvillense*, Blackb., *Quornense*, Blackb., and *interioris*, Blackb.; those having the antennæ and antennal furrows *Anthrenus*-like are *confertum*, Reitt., *variabile*, Reitt., and *australis* (*Anthrenus*), Hope. Beside the above there remains *C. obscurum*, Macl., on the description of which it is impossible to found any judgment; Macleay himself, however, expresses the opinion that the insect is not a true *Cryptorhopalum* and it is perhaps safe to assume that opinion to be correct. *C. Erichsoni*, Reitt, appears to be a synonym of *C.* (*Anthrenus*) *australe*, Hope.

I cannot find any conspicuous external characters distinguishing the sexes of the species of *Cryptorhopalum*. In the species of which I have seen numerous specimens, however, some are a little more elongate in form and have slightly more sparse puncturation than others; these I regard as males. Reitter does not refer to the sexual characters of his species beyond the remark in the description of *C. confertum* (which he describes as "subopacum")

that the prothorax of the female is "subnitidus." The sexual differences in the antennal club seem to be very slight; I specified what I took to be such a distinction in describing *C.* (?) (*Anthrenus*) *Flindersi* (=*confertum*, Reitt.), but really these differences are so small that they are hardly worth specifying especially as the antennæ are not easily examined satisfactorily unless they have been placed in position immediately after the death of the specimen. It might be supposed that among the *Cryptorhopala* which I have called the first section of the genus those with the club of their antennæ small were likely to be the females of those having large antennal clubs, but there are too many other differences among those before me for that to be the case, unless I have only one sex of each species; i.e., males of some species and females of others—which is not likely.

As the described species of *Cryptorhopalum* are now somewhat numerous a tabular statement of their distinctive characters seems to be called for. In providing it I have divided the species into two sections—the first containing species that seem to be typical members of the genus—the second containing the species referred to above as having antennæ and sternal cavities like those of *Anthrenus*.

It should be noted that abraded specimens are scarcely capable of being identified confidently unless in the case of a few species with well marked elytral pattern of colours. I have before me specimens from W. Australia (at least two species) and from Victoria which on account of their being more or less abraded I have not ventured to describe.

Tabulation of Species of Cryptorhopalum.

Section I. — True *Crytorhopala*, with two-jointed antennal club.

A. Antennal club large and circular.
  B. Elytra bicolorous, independently of the pubescence.
    C. Elytra traversed by a zone of blackish pilosity.
      D. Puncturation of elytra crowded and asperate ... ... *woodvillense*, Blackb.
      DD. Puncturation of elytra notably sparser and smoother ... ... *australicum*, Blackb.
    CC. Elytral pilosity entirely of pale colour *Eucalypti*, Blackb.
  BB. Elytra unicolorous, independently of the pubescence ... ... *quornense*, Blackb.
AA. Antenual club much smaller, and of oval or piriform shape.
  B. Puncturation of elytra considerably less close than in the following species ... *Casuarinæ*, Blackb.
  BB. Puncturation of elytra much closer.
    C. Puncturation of disc of pronotum scarcely less close and strong than of elytra ... ... *nealense*, Blackb.
    CC. Puncturation of disc of pronotum not at all as in C.

D. Puncturation of elytra asperate (colour of elytra almost uniformly castaneous) ... ... *ceciliense*, Blackb.
DD. Puncturation of elytra smooth (elytra black, with red markings) *interioris*, Blackb.

Section II.—Aberrant *Cryptorhopala*, antennal club with more than two joints.

A. The ashy pilosity of elytra in only two zones (antemedian fascia and basal spots) ... *confertum*, Reitt.
AA. The ashy pilosity in five zones (three fasciæ and basal and apical spots).
B. Elytra black ... ... *australe*, Hope.
BB. Elytra castaneous ... ... *variabile*, Reitt.
AAA. The ashy pilosity in four zones ... *quadrifasciatum*, Blackb.
AAAA. The ashy pilosity in three zones .. *terzonatum*, Blackb.

C. (*anthrenus*) *australe*, Hope. I have referred above to the probable identity of *C. Erichsoni*, Reitt., with this species, but as Hope's description is of very little value it seems necessary to state the reasons for my opinion, as follows: I have before me examples from Adelaide—Hope's locality—which are certainly conspecific with examples of a *Crytorhopalum* (Section II.) from Melbourne—Reitter's locality. These agree perfectly with Reitter's description of *Erichsoni*—though not so well (as noted above) with his subsequent note on the antennæ—and I have little doubt of their being that insect. Reitter describes quite satisfactorily the three fasciæ and basal and apical spots of whitish pilosity on the elytra and the spots on the pronotum—the latter distinct only in a very fresh specimen. Hope's description consists of only 17 words and as far as it goes perfectly describes specimens of the insect before me—both from Adelaide and Melbourne—which are not very fresh, but have lost some of the smaller patches of pilosity, mentioning the three fasciæ on the elytra and the lateral spots on the pronotum, but passing over the small pilose spots on the middle of the pronotum and the base and apex of the elytra. This may well have been either because Hope's type was somewhat abraded or in accordance with his evident custom of attaining brevity by limiting his description to the mention of a few leading particulars.

C. Casuarinæ, sp. nov. Elongato-ovale; sat nitidum; supra pilis cinereis vestitum; piceum, elytris castaneis utroque maculis 2 infuscatis (his longitudinaliter positis) indeterminatis ornato, antennis pedibusque rufotestaceis; prothorace fortiter transverso, antice angustato, supra subtilius sat crebre punctulato, angulis posticis (superne visis) retrorsum directis sat acutis; elytris minus crebre minus subtiliter punctulatis; prosterni sulcis ovalibus, ad latera positis; antennis sat abrupte clavatis, clava 2-articulata, articulo ultimo quam penultimus haud multo majori. Long., $1\frac{1}{5}$ l.; lat., $\frac{1}{2}$ l.

The antennæ and their sulci in this species do not correspond satisfactorily with those of any other *Dermestid* known to me but they appear to be only a modification of those of typical *Cryptorhopala*. The club is two jointed, but it is very small for a *Cryptorhopalum* and is evidently longer than wide, the apical joint scarcely wider and not much longer than the penultimate. The sternal foveæ are as in other *Cryptorhopala* cavities to receive the *club* rather than the whole antennæ and are (not circular but) oval and placed further back than usual. The form of the body is very narrow and elongate for a *Cryptorhopalum*. The elytra are of a pale castaneous colour, each with two large faintly defined spots (darker than the general color) on the disc —one slightly behind the base, the other about the middle. In one example the elytra are very evidently (though not very much) less sparsely punctulate than in the type. I suspect it is the female, and the type a male.

Central Australia, on flowers of the Desert Oak (Casuarina).

C. ceciliense, sp. nov. Ovale; sat nitidum; supra pilis cinereis vestitum; rufo-ferrugineum, capite et in elytris notulis 2 indeterminatis piceis, antennis (harum clava vix infuscata) pedibusque testaceis; antennis abrupte clavatis clava 2-articulata ovali (articulo apicali quam penultimus manifeste latiori sat longiori); prothorace fortiter transverso, antice angustato, supra subtiliter minus crebre punctulato, angulis posticis (superne visis) retrorsum directis sat acutis; elytris confertim subtilius subaspere punctulatis; prosterni sulcis ovalibus. Long., 1 l.; lat., $\frac{1}{2}$ l. (vix).

The colors and markings of this species are much like those of the preceding (*casuarinæ*) except that the prothorax is rufous. The club of the antennæ is much larger (though still small for a *Cryptorhopalum*), with the apical joint considerably more notably larger than the preceding joint. The pronotum is more finely and the elytra are very much more closely punctured. The form of the body is much less narrow and much more oval. I cannot regard these differences as sexual. If they were so the larger antennæ would probably indicate the male, but the form and puncturation accompanying the larger antennæ would be much more likely to belong to the female.

Central Australia (Cecilia Creek).

C. nealense, sp. nov. Ovale; sat nitidum; supra pilis cinereis vestitum; piceo-nigrum, elytris obscure rufescentibus fasciis 2 latis piceo-nigris (altera ad basin, altera vix pone medium, positis) ornatis, antennarum stipite tibiis tarsisque sordide testaceis; antennis abrupte clavatis, clava 2-articulata ovali (articulo apicali quam penultimus parum latiori multo

longiori); prothorace fortiter transverso, antice angustato, supra crebre subfortiter (fere ut elytra) punctulato, angulis posticis retrorsum leviter directis modice acutis; elytris crebre subfortiter punctulatis; prosterni sulcis ovalibus. Long., $1\frac{1}{5}$ l.; lat., $\frac{2}{5}$ l.

The most apparent character of this species is the strong puncturation of its pronotum, which is almost identical in character with that of the elytra. The club of the antennæ is still larger than that of *C. ceciliense* being of about average size among the Australian *Cryptorhopala* but it still retains the oval form as in the preceding two species. The stipes of the antennæ is stouter than in the preceding two species, with its apical joint more evidently dilated but not nearly sufficiently so to be recognised as a part of the club.

Central Australia (Neale River).

C. Eucalypti, sp. nov. Late ovale; sat nitidum; supra pilis cinereis vestitum; nigrum, elytris (parte basali fere tertia excepta) rufis pone medium obsolete fusco-fasciatis, antennis pedibusque testaceis; antennis perabrupte clavatis, clava magna circulari 2-articulata, articulo apicali quam penultimus valde majori; prothorace fortiter transverso, antice angustato, supra minus crebre subobsolete punctulato, angulis posticis retrorsum directis sat acutis; elytris confertim subfortiter punctulatis; prosterni sulcis circularibus. Long., 1 l.; lat., $\frac{1}{2}$ l. (vix).

The antennæ and sternal cavities of this species are those of a typical *Cryptorhopalum;* among its congeners presenting these characters it is the only one known to me having bicolorous elytra with their pilosity unicolorous.

Central Australia; Oodnadatta.

C. (?) quadrifasciatum, sp. nov. Ovale, minus latum; minus nitidum; supra pilis cinereis vestitum, his in elytris fascias basalem apicalem et 2 dorsales formantibus; nigrum, antennis pedibusque ferrugineis; antennarum clava sat elongata, 3-articulata; prothorace fortiter transverso, antice angustato, supra subtilius sat crebre punctulato, angulis posticis retrorsum directis sat acutis; elytris confertim sat aspere subfortiter punctulatis; prosterni sulcis ut *Anthreni* (anticis, transversim positis). Long., $1\frac{1}{5}$ l.; lat., $\frac{3}{5}$ l.

Easily distinguishable from its immediate allies by the ashy pilosity of its elytra being placed in four zones—basal, antemedian, postmedian, and apical.

Central Australia; Oodnadatta.

C. terzonatum, sp. nov. Ovale; minus latum; sat nitidum; supra pilis cinereis ornatum, his in pronoto latera versus

condensatis et maculas 3 (2 discoidales, 1 in lobo postico) formantibus, in elytris fasciam antemedianam macularem (hac suturam haud attingenti) maculam postmedianam lateralem et maculas 2 anteapicales (his transversim sitis) formantibus; piceum, antennis pedibusque ferrugineis,; antennarum clava 3-articulata; prothorace fortiter transverso,antice angustato, subtiliter minus perspicue punctulato, angulis posticis retrorsum directis sat acutis; elytris squamose vix aspere (sed apicem versus asperrime) punctulatis; prosterni sulcis ut *Anthreni* (anticis, transversim positis). Long., 1 l.; lat., $\frac{3}{10}$ l.

This very small insect belongs to what I have called Section II of *Cryptorhopalum*. It is easily distinguishable from the others of the same section by the disposition of the white pilosity of its upper surface which forms an ante-median fascia touching the lateral margins and widely interrupted on either side of the suture, a small spot on either side close to the lateral margin, and a row of four spots placed arcuately across the elytra a little before the apex.

Queensland; Townsville (Mr. F. P. Dodd).

ANTHRENUS.

Of the seven species found in Australia that stand under this name only three are correctly placed there—viz., *ocellifer*, Blackb. and the two introduced species *varius*, Fab., and *museorum*, Linn. I may say in passing that likely as *museorum* is to occur in Australia I have no evidence of its occurrence beyond its mention in Masters' Catalogue; all the *Anthreni* that I have seen bearing the name are *varius*, Fab.—which is the great pest of Australian museums. *A. nigricans*, Macl., is (as noted above) a *Thaumaglossa*. *A. australis*, Hope, and *Flindersi*, Blackb., belong to the aggregate which I have treated provisionally above as a section of *Cryptorhopalum*, but which undoubtedly represents a distinct genus intermediate between *Cryptorhopalum* and *Anthrenus*, having the vestiture of the former and antennæ and antennal cavities as in the latter. As already noted I refrain from founding a new genus for them only because I am not sure that a name may not have already been given to congeners from some other country. I have chosen *Cryptorhopalum* for their temporary location because most of them have already been placed there by Reitter. *A. Flindersi*, Blackb., is I think a synonym of *Cryptohopalum confertum*, Reitt. Owing to its antennal structure I did not (when I described it) consider the possibility of its having been previously described as a *Cryptorhopalum*. *A. socius*, Lea, is certainly not an *Anthrenus*, its vestiture being described as consisting of hairs, Lea does not

give sufficiently exact details of the antennal cavities, tarsal structure, &c., to allow of much more than a guess as to the genus of his insect—but the details he gives are inconsistent with its being an *Anthrenus* or a *Cryptorhopalum* or congeneric with the species referred to above as intermediate between those two genera. I suspect it is a *Trogoderma*. *A. australis*, Hope, is fully discussed above under *Cryptorhopalum*.

BYRRHIDÆ.

MORYCHUS.

I find that I was in error in (doubtfully) attributing to *Byrrhus* the two species which I described under the names *B. torrensensis* and *B. raucus*. The original specimens of the former were much encrusted with some extraneous matter and the examination of subsequently captured examples has satisfied me that the position of the tarsi—laid back against the tibiæ—which led me to associate the species with *Byrrhus* was due to this extraneous matter having made them cohere to their tibiæ. *B. torrensensis* therefore should be transferred from *Byrrhus* to the allied genus *Morychus*. It is a winged insect and its tarsi are devoid of well-defined lamellæ on the undersurface, being very similar to the tarsi of the European *M. æneus*, Fab. The other species referred to (above) is discussed in the following note.

PEDILOPHORUS.

Byrrhus raucus, Blackb., belongs to *Pedilophorus*—which Lacordaire and Erichson regard as a subgenus of *Morychus*—being wingless and having a very long lamella under the third joint of its hind tarsi. In Masters' Catalogue *Morychus heteromerus*, King, is referred to *Pedilophorus*—I suppose either because it has been ascertained to belong to that aggregate as distinguished from the typical form of *Morychus* (I do not think any note to that effect has been *published)* or on the ground that *Pedilophorus* as a name has priority over *Morychus*. It certainly is the older name but Lacordaire objected to it on the ground that it was founded on a specific rather than a generic character. I hesitate to regard this as a valid reason for discarding the claim of the name to priority—but I see no reason why both names should not stand as the differences between the respective insects to which they are applied seem to be well marked and important. Regarding *Morychus heteromerus*, King, I am in some perplexity. The description of it is most unsatisfactorily brief, but it is certainly very distinct from all the *Byrrhidæ* known to me. If King's statement that its tarsi are heteromerous is not an error of observation I should expect to find that it is not really a *Byrrhid*.

MICROCHÆTES.

The number of species that have been attributed to this genus is six, but only four of them seem to be rightly placed there. *M. costatus*, Macl., is stated by its author to represent in all probability a new genus and its description does not read at all like that of a *Microchætes*. *M. minor*, King, is described as having tetramerous tarsi—which at once removes it from this genus—and its very small size and upper surface devoid of fascicles render it very unlikely to be a *Microchætes* even if its author was mistaken about the number of joints in its tarsi. Of the remaining four species the description of *M.* (*Byrrhus*) *australis*, Boisd., is perfectly useless and would fit any member of the genus that I have seen—except perhaps a species described below which is differently colored—while *M. sphœricus*, Hope, could certainly not be identified with confidence except by examination of specimens from the original locality—Western Australia; the few characters mentioned are found in several species before me. Thus there are only two known species of which any serious count can be taken as being intelligibly described, viz., *M. scoparius*, Er., and *fascicularis*, Macl. The former of these two is known to me, while the description of the latter mentions a row of *five* fascicles behind the transverse furrow on the pronotum—a character that distinguishes it from all that I have seen of the genus. I have, however, some specimens kindly given me by Mr. Lea under the name of *fascicularis*, Macl., and presumably named by comparison with the type—but they have only the *four* fascicles attributed to *M. sphœricus*, Hope, and present in several of the species before me. The presence of a fifth fascicle on the row on the pronotum would be a remarkable character as it would have to be on the centre line of the segment and consequently would interrupt the smooth dorsal space that exists in even the most strongly tuberculate of the species before me. The following is a tabular statement of the characters of the species known to me.

A. Elytra with fascicles between the seventh interstice and the lateral margin.
  B. Puncturation of metasternum coarse in front but much finer behind ... ... *fascicularis*, Macl.?
  BB. Puncturation of metasternum even or nearly so.
    C. Puncturation of metasternum extremely coarse ... ... *solidus*, Blackb.
    CC. Puncturation of metasternum very much finer ... ... *scoparius*, Er.
AA. No fascicles on the elytra beyond the fifth interstice ... ... *nigrovarius*, Blackb
AAA The seventh interstice of the elytra is the last fasciculate interstice ... ... *coloratus*, Blackb.

M. solidus, sp. nov. Latus; convexus; nitidus, sed indumento opaco squamoso tectus; piceo-niger, sed indumento cinerascenti; supra setis erectis castaneis vestitus, his hic et illic condensatis (partim in tuberculis partim in superficie dorsali positis); prothorace valde transverso, antice fortiter angustato, supra in parte mediana antica sat fortiter compresso-elevato, trans medium profunde sulcato, pone sulcum transversim 4-fasciculato; elytris striatis, interstitiis convexis, passim (parte apicali sexta excepta) sat crebre tuberculatis et fasciculatis; sternis et coxis posticis grosse sat crebre sat æqualiter punctulatis. Long., 2 l.; lat., 1½ l.

As I have only one specimen of this insect I have not subjected it to the removal of the indumentum covering its upper surface. It is, however, distinguishable from all the others before me by—in combination—its dark under surface, its elytra having their whole surface except the extreme apex studded with confused tubercles and fascicles of castaneous setæ, and its sterna and hind coxæ extremely coarsely and somewhat evenly punctulate. A small abrasion of the indumentum on the elytra reveals the surface as crenulate-striate with strongly and roundly elevated interstices. The fascicles and tubercles of the elytra are so distributed that when the insect is looked at from behind there seems to be a very deep wide furrow across the elytra somewhat behind the middle. It is allied to *M scoparius*. Er., and to the species sent to me by Mr. Lea as *fascicularis*, Macl., but differs from both of them by, *inter alia*, the striæ of the elytra being crenulate and their interstices strongly convex the very coarse even puncturation of the sterna, &c.

Queensland.

M. nigro-varius, sp. nov. Ovalis; minus latus; sat convexus; subnitidus; piceo-niger, sed squamis opacis cinereis dense vestitus, antennis pedibusque plus minusve dilutioribus; supra setis erectis nigricantibus et nonnullis castaneis hic disperse illic fasciculatim ornatus, nullo modo tuberculatus; prothorace valde transverso, antice fortiter angustato, supra in parte mediana antica minus fortiter compresso-elevato, trans medium late leviter sulcato crebre minus fortiter punctulato haud fasciculato; elytris sat fortiter punctulato-striatis, puncturis in striis sat grossis, interstitiis subtilissime punctulatis suturam versus planis extrorsum gradatim magis convexis (2° postice, 3° antice 5° toto fasciculas elongatas et nonnullas quadratas ferentibus; sternis et coxis posticis confertim minus fortiter sat æqualiter punctulatis. Long., 1⅗ l; lat., 1 l.

Until the squamose indumentum has been removed the sculpture of this species is scarcely discernible, although the

elytra appear finely striate, the striæ scarcely punctulate. The fascicles of setæ are confined to the elytra where they have a dark velvety appearance. On the second interstice there are two or three quadrate fascicles considerably behind the middle, on the front two-thirds of the third interstice two or three elongate fascicles, on the fifth insterstice two elongate and two quadrate fascicles placed alternately. Differs from all its congeners known to me by the fascicles of erect setæ being entirely confined to the inner half of each elytron.

S. Australia.

M. coloratus, sp. nov. Latus; convexus; minus nitidus; piceo-niger, sed indumento squamoso opaco tectus, corpore subtus pedibus et nonnullorum exemplorum elytris latera versus rufis; supra setis erectis vestitus, his hic et illic condensatis (partim in tuberculis partim in superficie dorsali positis); prothorace valde transverso, antice fortiter angustato, supra in parte mediana antica sat fortiter compresso-elevato, trans medium late leviter sulcato, pone sulcum transversim obsolete tuberculato-fasciculato; elytris crenulato-striatis, interstitiis vix convexis (3°, 5°, 7° que pone medium obtuse vix tuberculatis, fasciculis in interstitiis 2°—7° positis; sternis minus crebre (coxis posticis magis crebre) sat fortiter punctulatis. Long, $1\frac{3}{5}$ l; lat., $1\frac{1}{5}$ l. (vix).

The second elytral interstice bears a moderately large fascicle considerably behind the middle and a very small one still nearer the apex—between these last two there are some whitish scales in very fresh specimens; the third interstice has a small basal fascicle, about three small fascicles almost confluent ending with about the first quarter of the interstice, a small one somewhat in front of the middle, about seven small subconfluent ones ending a little behind the middle, a scarcely perceptible one considerably behind the middle and a well defined one near the apex; the fourth interstice has a scarcely defined fascicle at the top of its hind declivity; on the fifth interstice there is a moderate then a small then a large then a small fascicle, beginning a little in front of and ending considerably behind the middle—the hindmost fascicle of the third interstice might be reckoned as belonging to this series as the third and fifth interstices coalesce behind; the sixth interstice has a scarcely defined fascicle near the apex; the seventh interstice has a large fascicle near the top of its hind declivity and a smaller one still further back and the eighth interstice is like the sixth. These fascicles seem constant in perfectly fresh specimens; in specimens not quite fresh the fourth, sixth, and eighth interstices are devoid of any trace of fascicles. The tubercles of the elytra are only visible in abraded

specimens and are merely slight increases on a short space—behind the middle—in the width and convexity of the third fifth and seventh interstices. The red colouring of the under-surface and legs together with the dark coloring—except a patch of whitish scales about the top of the hind declivity of the elytra in non-abrabed specimens—distinguishes this species readily. Otherwise it differs from its described congeners as follows, *inter alia*—from *nigro-varius*, Blackb., by the presence of fascicles on the external half of each elytron, from *solidus*, Blackb., by the considerably finer and less close puncturation of the sterna, from the species referred to above as *fascicularis*, Macl.?, by its pro-sternum being very much more closely punctulate than its meta-sternum, and from *scoparius*, Er , by there being no well defined fascicles on its elytra outside the seventh interstice and by the coarse crenulation of its elytral striæ.

S. Australia; Eyre's Peninsula, in seaweed.

HETEROCERIDÆ.

Australian species of two genera appertaining to this Family are known—the old widely distributed genus *Heterocerus* and *Elythomerus* (founded by Mr. C. O. Waterhouse for a Queensland species) differing from *Heterocerus inter alia* by its contiguous front coxæ. I have not seen an example of the latter.

HETEROCERUS.

Of this genus Australian species have been described under six names, on which notes will be found below together with descriptions of two new species. The *Heteroceri* are most difficult to deal with on account of their extremely close superficial resemblance *inter se* and their liability to variation in colour and markings. The most satisfactory distinctive characters seem to be sexual. Unfortunately the description of the species first recorded as Australian—*H. Mastersi*, Macl.—does not mention a single really specific character. The description (next published) of *H. Australasiæ*, Waterh., is defective in the omission of any information as to the sex of the specimen described, and its sexual characters if it was a male. I have taken a species on the banks of the Murray which may possibly be a variety of it, and which therefore I forbear to describe as new. I do not find any clearly defined discrepancy between this S. Australian species and Waterhouse's description except that the latter indicates the sutural infuscation as confined to the hinder half of the elytra while in the former it attains the base and is much dilated in the scutellar region where it is at its darkest. I take my two specimens to be male and female, the one having the head narrower than the other, with the clypeus strongly—in the other less strongly—emarginate in front and furnished with two teeth

so minute as to be only noticeable when carefully looked for—of which I cannot find any trace in the other. This species resembles *H. multimaculatus* in outline but its elytra are much more finely punctured—more finely indeed than in any other of the *Heteroceri* before me. For the determination of the Australian species of this genus I have found the number of spines on the external margin of the front tibiæ a valuable and invariable character. All of them known to me belong to the section of the genus having the base of the pronotum more or less margined, and I do not find in any of those of which I can positively identify the male any peculiarity likely to be sexual in the arched ridge of the basal ventral segment. On the other hand all the specimens that seem to be decidedly males have good sexual characters on the head. The following tabular statement of the most conspicuous distinctions among the species known to me is ot altogether satisfactory inasmuch as I have had to rely upon the coloring to distinguish *Victoriæ*, Blackb., from two allied species. There are other differences, however, which do not lend hemselves to tabulation and I do not doubt that the male of *Victoriæ*—unknown to me—has well-defined frontal characters. The descriptions of *H. Mastersi*, Macl., and *Australasiæ*, Waterh., do not supply the information that would enable me to place them in this tabulation. I may add that the striation of the elytra seems to be in this genus quite unreliable for the determination of species. I have specimens with evident striation taken in company with—and showing no other difference from—specimens whose elytra are non-striate.

A. Front tibiæ with 9 to 10 external spines
  B. Elytra finely and closely punctulate.
    C. Form narrow and elongate; elytra conspicuously narrowed behind the shoulders — *multimaculatus* Blackb.
    CC. Form normal
      D. The light coloring of the elytra not reaching base except on lateral margin
        E. Clypeus of male with two very short slender spines in front between which the outline is not emarginate — *Flindersi*, Blackb.
        EE. Clypeus of male with two blunt teeth in front between which the outline is emarginate ... ... — *indistinctus*, Blackb.
      DD. A subsutural vitta of light colour reaches the base of the elytra ... — *Victoriæ*, Blackb.
  BB. Elytra much more strongly punctulate than in the other species ... ... — *largsensis*, Blackb.
AA. Front tibiæ with less than nine external spines ... ... — *debilipes*, Blackb.

H largsensis, sp. nov. Robustus; modice elongatus; sat nitidus; setis erectis sat elongatis vestitus; niger, antennarum basi mandibulis prothoracis lateribus elytris (notulis nonnullis

piceis exceptis) tibiis tarsis et abdominis lateribus rufo-brunneis; capite pronotoque opacis confertim subtiliter punctulatis; hoc postice marginato, ad latera minus fortiter rotundato; elytris sat fortiter subrugulose punctulatis (exempli typici) substriatis, pone humeros parum angustatis; tibiis anticis 10-spinosis.

Maris clypeo antice dentibus 2 parvis acutis armato, inter dentes sat profunde emarginato. Long., 2 l.; lat., $\frac{4}{5}$ l.

Fem. latet.

This species is very distinct from all its congeners known to me by the considerably longer pubescence of its upper surface and the much stronger puncturation of its elytra. The piceous marks on the elytra are—in the type—a small blotch round the scutellum, and on each elytron two elongate basal blotches between the scutellum and the lateral margin an irregular oblique median blotch and a post-median blotch resembling roughly the letter U with its convexity directed forward. The teeth on the front of the clypeus of the male, though not actually large are decidedly larger than those of *H. indistinctus*, Blackb., and are well elevated with a sharp free point directed forward above the labrum, while in *indistinctus* they are mere angular extensions of the outline of the clypeus scarcely raised above the surface of the labrum. The corresponding projections in *Flindersi*, Blackb., are very short and slender *spines*, while in *debilipes*, Black. —described below—they are more like those of the present species but somewhat smaller and less sharply pointed forward.

S. Australia (bank of a Creek near Largs Bay.)

H. debilipes, sp. nov. Sat elongatus; sat convexus; pone humeros parum angustatus; minus nitidus; pube brevi erecta vestitus; obscure ferrugineus vel picescens, antennis palpis mandibulis pedibusque testaceis, elytris testaceo-brunneis notulis nonnullis piceis ornatis; capite pronotoque opacis confertim subtilissime punctulatis; hoc postice subtiliter marginato, ad latera fortiter rotundato; elytris subtiliter confertissime subasperatim punctulatis, vix vel nullo modo striatis; tibiis anticis 8-spinosis.

Maris clypeo profunde subtriangulariter emarginato, antice bidentato, dentibus laminas compressas erectas nonnihil simulantibus.

Feminæ clypeo haud dentato. Long. $1\frac{1}{2}$ l; lat., $\frac{3}{5}$ l.

The distinctive characters of this species seem to be—small size, convex subcylindric form, extremely close elytral puncturation, extremely deep emargination of the front of the clypeus (best seen when viewed obliquely from in front) and small number of spines on the front tibiæ. The puncturation of the elytra is

closer than in any other Australian *Heterocerus* known to me except that mentioned above as possibly *H. Australasiæ*, Waterh , in which the puncturation is somewhat closer and correspondingly finer but not at all asperate. The small number of spines on the front tibiæ is constant in the five specimens that I have seen and is certainly a reliable character. The clypeal processes of the male are larger than in the other species of which I know the male with certainty except *H. largsensis*, Blackb. They have somewhat the appearance of small compressed laminæ projecting from the front of the clypeus with their front face vertical and their upper outline forming an exact right angle with their front outline—viewed from the side—but not actually *toothed.* As, however, with sexual characters of this description in many other insects, there is a certain degree of variability in the size and sharpness of outline in this structure. The dark markings on the elytra (fairly constant on the specimens examined) are—one round the scutellum, two between the scutellum and the lateral margin (these, confluent on the base), a transverse median irregular (in some examples interrupted) blotch, and a zig-zagged transverse post-median blotch which is connected at its inner extremity with the inner extremity of the median blotch by a subsutural line.

Central Australia.

H. multimaculatus, Blackb. The type of this insect which is still unique is apparently a female; its clypeus resembles that of the female of *H. debilipes*, Blackb., from which it differs by its larger size, different markings, much less close elytral puncturation, more elongate form—with elytra narrowed behind the shoulders—and more numerous tibial spines. In my description of it I called the puncturation of its elytra "much" closer than in *H. Flindersi*, Blackb.; but I think the phrase was somewhat too strong, and "evidently" should be substituted for "much."

H. Flindersi, Blackb. The type of this insect is a female. I have subsequently found the male, the sexual characters of which have been indicated above under the heading of *H. largsensis*, Blackb., and also in the tabulation. In my experience the commonest and most widely distributed Australian *Heterocerus.*

H. indistinctus, Blackb. The sexual male characters of this species are indicated above under the heading of *H. largsensis*, Blackb., and also in the tabulation.

H. Victoriæ, Blackb. My two examples of this insect appear to be females. The clypeus is widely and decidedly emarginate in front and the labrum only feebly convex. The markings of the elytra are very distinct from those of the other Australian *Heteroceri* known to me.

BUPRESTIDÆ.

PARACUPTA.

P. bellicosa, sp. nov. Elongato-oblonga, sat angusta; capite nigro-viridi; pronoto nigro-violaceo, ad latera sulco lato aureo-viridi impresso; elytris nigro-viridibus, sutura indeterminate violacea, sulco sublaterali aureo-viridi ad apicem vix abbreviato impresso; corpore subtus aureo-viridi; antennis violaceis; pedibus aureo-viridibus; partibus impressis (capitis prothoracisque sulco mediano excepto) pube subtili flava confertis; capite longitudinaliter concavo, sat grosse subrugulose punctulato; prothorace leviter transverso, a basi antrorsum continue angustato, sparsius minus fortiter punctulato, sulco longitudinali mediano integro impresso, lateribus fere rectis; scutello sat parvo; elytris haud costulatis, subtiliter subseriatim (inter sulcum sublateralem et marginem magis fortiter vix seriatim) punctulatis, interstitiis sparsim subtiliter punctulatis, sutura pone scutellum alte depressa, lateribus in parte postica tertia dentibus sat magnis circiter 8 marginatis, sutura ad apicem spiniformi; prosterno medio postice longitudinaliter sulcato fere lævi, antice grosse minus crebre punctulato, prosterno alibi irregulariter (hic confertim subtiliter, illic sparsim grosse) punctulato; metasterno medio sparsim grosse (alibi confertim sat subtiliter) punctulato; coxis posticis intus sparsissime extus confertim, abdomine medio sparsissime partibus lateralibus confertim, punctulatis; segmentis ventralibus latera versus late impressis et flavo-pubescentibus.

Maris (?) segmento ventrali apicali late profunde feminæ (?) anguste minus profunde emarginato. Long. (maris ?) $8\frac{1}{2}$ l. (feminæ ?) $11\frac{1}{2}$ l.; lat. (maris ?) $2\frac{3}{5}$ l. (feminæ ?) $3\frac{2}{5}$ l.

The nearest previously described Australian species in respect of markings is *P. albivittis*, Hope, from which, however, the present insect is extremely distinct. In form it is much narrower and more acuminate behind; the head and pronotum are much less closely and more finely punctulate; the median longitudinal sulcus of the pronotum is entire, wide, and deep; the serration of the hind part of the lateral margin of the elytra is much stronger, and their lateral vitta is continuous to the base, &c., &c. I suppose there can be little doubt that the smaller specimen with its apical ventral segment more deeply emarginate is the male.

N. Queensland; sent by Mr. C. French.

APPENDIX.

The following two species have come under my notice while the preceding pages were going through the press.

CUCUJIDÆ.

LÆMOPHLŒUS.

L. Victoriæ, sp. nov. Mas. Elongatus; sat angustus; sat parallelus; nitidus; subpubescens; rufo-ferrugineus, elytris ante apicem transversim infuscatis; capite quam prothorax vix angustiori, sat convexo, vix inæquali, subtiliter crebrius punctulato, clypeo antice leviter subrotundato; antennis quam corpus haud brevioribus, articulis 9°—11° quam ceteri sat longioribus (inter se sat æqualibus, quam latioribus multo longioribus); prothorace quam longiori paullo latiori, postice vix angustato, supra crebre minus subtiliter punctulato, utrinque unistriato, lateribus parum arcuatis, angulis anticis (superne visis) vix bene definitis nullo modo extrorsum directis posticis sat acute rectis; elytris (certo adspectu) striis dorsalibus 3 (ut *L. ferruginei*, Steph.) impressis, latera versus tenuiter carinatis, interstitiis punctulatis.

Feminæ capite angustiori, antennis quam corpus paullo brevioribus. Long., 1 l.; lat., $\frac{3}{10}$ l.

In the tabulation of *Læmophlœus* (above) this species falls beside *L. Lindi*, Blackb., from which it differs *inter alia* in its antennæ—those of the male being fully as long as the body, and those of the female quite three-quarters of the length of the body. As it is just possible that I have not seen the male of *Lindi* it should be noted that the antennæ of the female of this species are much longer than those of the female of *Lindi*, with the apical three joints very much more elongate. The front angles of the prothorax are slightly more defined than those of *L. Lindi* (and *L. ferrugineus*, Steph.). The following species of those not known to me may possibly have front angles of prothorax not unlike those of the present species; therefore I note that in that case the present species differs *inter alia* from *L. conterminus*, Olliff, by its much less transverse prothorax, from *L. contaminatus*, Gr., by its testaceous antennæ, from *L. Leachi*, Gr., by the very elongate terminal joints of its antennæ.

Victoria (sent by Mr. French).

SILVANUS.

S. similis, Wesm. Mr. French has sent me for determination an example (from P. Mackay, Queensland) of a *Silvanus* which I cannot separate specifically from this European insect. It has not been previously recorded as Australian.

CONTENTS.

PAGE.

TURNER, DR. A. JEFFERIS: New Australian Lepidoptera, with Synonomic and other Notes 1

LOWER, OSWALD B.: Descriptions of New Australian Noctuina, &c.... 27

HOWCHIN, WALTER: Further Notes on the Geology of Kangaroo Island 75

BLACKBURN, REV. T.: Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species 91

FEB 23 1904

7256

TRANSACTIONS

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA

(INCORPORATED).

VOL. XXVII., Part II.

[WITH TWO PLATES.]

INCLUDING PROCEEDINGS AND REPORTS.

EDITED BY WALTER HOWCHIN, F.G.S.

ISSUED DECEMBER, 1903.

PRICE, FIVE SHILLINGS.

Adelaide:

W. C. RIGBY, 74, KING WILLIAM STREET.

Parcels for transmission to the Royal Society of South Australia, from Europe and America, should be addressed "per W. C. Rigby, care Messrs Thos. Meadows & Co., 34, Milk Street, Cheapside, London."

Descriptions of New Genera and Species of Australian Lepidoptera.

By Oswald B. Lower, F.E.S. (Lond.), &c.

[Read June 2, 1903.]

BOMBYCINA.

LASIOCAMPIDÆ.

Opsirrhina cyclomela, n. sp.

Male and female, 60-120 mm. Head, face, thorax, and legs deep mahogany-red, all tarsi suffusedly ringed with dull ochreous-whitish, posterior tibiæ ochreous. Antennæ fuscous, pectinations ochreous. Abdomen yellow above, with broad black segmental bands, beneath mahogany-red. Forewings elongate, triangular, termen obliquely rounded; deep mahogany-red, more or less irrorated with dull whitish scales, especially in female; four obscure, similar dull fuscous moderate, curved, fasciæ; first from one-sixth costa to about one-fourth innermargin; second parallel beyond; third from costa in middle to middle of innermargin; fourth parallel beyond; a curved row of more or less connected fuscous spots from costa at four-fifths to anal angle; a dull fuscous discal spot; all these markings sometimes absent, especially in female; cilia mahogany-red. Hindwings with termen strongly rounded; deep mahogany-red, strongly mixed with yellowish along innermargin and at base; lines as in forewings, but first two hardly traceable; cilia as in forewings.

This fine insect is apparently undescribed, and at Dr. Turner's suggestion I am doing so. The female is a very heavily built insect and much liable to become greasy.

Cooktown and Duaringa, Queensland; several specimens from late Mr. G. Barnard taken in March

GEOMETRINA, HYDRIOMENIADÆ.

Hypycnopa, n. g.

Face with small cone of scales. Palpi short, porrected. Antennæ in male bipectinated throughout. Posterior tibiæ with all spurs present. Forewings with areole double; 12

free, vein 6 sometimes out of 9 Hindwings with patch of modified yellow scales; 6 and 7 stalked.

Type, *delotis*, Low.

Somewhat allied to *Xanthorhœ*, Hb., on the one hand, but with some reversionary tendency to *Melitulias*, Meyr.

HYPYCNOPA DELOTIS, n. sp.

Male and female, 23-25 mm. Head, antennæ, thorax, legs and abdomen ashy-grey-whitish. Antennal pectinations at greatest length 6, abdomen banded with blackish, tibiæ and tarsi obscurely ringed with whitish. Forewings elongate, triangular, termen entire, oblique; ashy-grey-whitish, finely strigulated throughout with transverse blackish lines; markings black; a fine curved transverse line near; edges of median band limited by fine lines; anterior from one-third costa to one-third innermargin, gently curved, anteriorly edged by a dull whitish band, containing a fine line of fuscous throughout; posterior edge from two-thirds costa to two-thirds innermargin, waved throughout, with a moderate bidentate projection in middle, sinuate above and below this, and with a slight indentation on fold; a transverse line, thicker on lower half, from costa in middle of median band, thence inwardly oblique to innermargin and there coalescing with anterior edge of band, forming a thick streak, followed by a parallel line just beyond; a short oblique streak from just beneath apex and reaching a fine waved double subterminal line; a row of elongate black streaks along termen; cilia fuscous with a dark median line. Hindwings with termen very faintly waved; whitish fuscous, with faintly waved transverse fuscous lines; edges of median band only discernible on innermargin; a postmedian transverse fuscous line, followed by a parallel, but more waved fuscous line; an elongate patch of yellow scales below costa in middle, absent in female; cilia greyish-fuscous.

Recalls *Phrissogonus insigillatus*, Walk., especially the female.

Broken Hill, New South Wales, male; Birchip, Victoria, female; both taken in April. The latter specimen taken by Mr. D. Goudie.

MESOPTILA ANTHRACIAS, LOW.

(P. L. S., N.S.W., 1897, p. 12.)

I submitted a specimen of this insect to Sir Geo. Hampson, who informs me that it is not referable to the *Geometrina*, but to the *Noctuina* in the genus *Raparna*, so that the remarks in reference thereto may be treated as non-existent. It will now stand as:—

RAPARNA ANTHRACIAS,

and is referable to the *Hypeninæ*.

XANTHORHŒ HYPOGRAMMA, n. sp.

Male, 24 mm. Head, palpi, antennæ, thorax, and abdomen ochreous, palpi, fuscous on sides and above on basal half, antennal pectinations (?). Abdomen with pairs of fuscous spots on each segment. Legs ochreous, anterior and middle pair banded with fuscous. Forewings elongate, triangular, termen rounded, faintly waved; pale ochreous, with fuscous markings; costa shortly strigulated from base to anterior edge of median band; a curved line from one-sixth costa to one-sixth innermargin; basal area fuscous-tinged; median band broad, anterior edge from one-third costa to one-third innermargin, gently curved inwards throughout, followed by two parallel lines; most distinct on margins; posterior edge from costa beyond two-thirds to innermargin beyond two-thirds, slightly angulated just below costa, and with a prominent median projection, somewhat sinuate above and below this, anteriorly edged throughout by a moderate, thick parallel shade, which is again edged anteriorly by a fine parallel line, leaving middle of band clear ground color; a well defined curved discal spot; a suffused spot on costa near apex; an irregular oblique streak from termen just below apex, continued as a short subterminal band to nearly half across wing, space between posterior edge of median band and termen marked with fine transverse pencillings of light fuscous; a series of dots along termen, arranged in pairs; cilia ochreous. Hindwings with termen faintly waved; pale ochreous; a well defined blackish discal dot; median fascia blackish, anterior edge suffused, posterior edge well defined, gently curved, somewhat prominent in middle; two or three obscure short parallel lines of fuscous above anal angle; dots along termen and cilia as in forewings. Underside of hindwings pale ochreous, markings of upperside reproduced, but much more distinct; discal dot connected with base by a black bar; parallel lines above anal angle forming a subterminal band.

The antennæ being imperfect render the position of this species uncertain; it is very unlike any other known to me.

Bairnsdale, Victoria; one specimen in February.

MONOCTENIADÆ.

TAXEOTIS DASYZONA, n. sp.

Female, 26 mm. Head, thorax, abdomen, and legs ochreous-grey. Face and palpi blackish ferruginous, palpi

sharply white on basal half beneath. Antennæ ochreous. Forewings elongate, triangular, termen faintly bowed, slightly sinuate beneath apex; 12 free; ochreous-grey, with fuscous markings; a small spot below costa at one-fourth, a second above innermargin at one-third, and a third midway between; a moderate, round, pale centred discal spot; a moderately thick fuscous shade from costa at three-fourths to innermargin at three-fourths, somewhat sinuate inwards on lower half; a row of dots along termen; cilia ochreous-fuscous. Hindwings with color, markings, and cilia as in forewings, but first three dots absent and fuscous shade nearly straight.

Nearest *anthracopa*, Meyr., but quite distinct by the neural character and markings.

Hoyleton, South Australia; one specimen in December.

Taxeotis holoscia, n. sp.

Female, 24 mm. Head, thorax, and abdomen dark fuscous, somewhat leaden-tinged. Antennæ fuscous. Face and palpi deep blackish fuscous, base not white beneath. Legs dark fuscous. Forewings elongate, triangular, termen gently rounded, faintly sinuate beneath apex; dark leaden-fuscous; 11 connected by bar with 12; an erect blackish mark on innermargin at one-third; a small spot on costa at one-fourth and another midway between, the three forming a somewhat curved series; a moderate fuscous discal spot; a row of somewhat connected small fuscous spots from costa at three-fourths to innermargin at two-thirds, gently curved outwards on upper half; a fine fuscous line along termen, more or less interrupted into spots; cilia fuscous, darker on basal half, with a distinct grey parting line. Hindwings dark fuscous, minutely irrorated with black; two short blackish lines from innermargin before and beyond middle, the latter better developed; line along termen and cilia as in forewings.

Not unlike some forms of female *intextata*, but the different position of lines as well as the wholly dark palpi at once separate it.

Brisbane, Queensland; one specimen in October.

Taxeotis xanthogramma, n. sp.

Male, 26 mm. Head and thorax greyish-ochreous. Abdomen silvery-grey. Face and palpi dark fuscous, palpi 1½, not white beneath. Antennæ deeply dentate, ciliations 1. Legs fuscous. Forewings elongate, triangular, termen gently rounded; 12 connected by bar with 11; grey, with fine scattered blackish scales; a double black dot on innermargin at

one-third, a second on costa at one-third and a third midway between, first and third, anteriorly edged with ferruginous; an indistinct blackish discal spot; a series of fine black spots from costa at two-thirds, to innermargin at two-thirds, strongly curved outwards in middle and edged posteriorly from below costa to termination by a moderate, bright ochreous-ferruginous line; a subterminal row of blackish spots, obscure; a row of well defined black dots along termen; cilia grey. Hindwings dull silvery-grey, without markings; dots along termen and cilia as in forewings. Underside of both wings silvery-grey, without markings.

Probably nearest *isophanes*, Meyr., but differs by the ochreous markings and absence of markings beneath. I have two specimens from Melbourne which only differ in being duller colored; from *phœopa*, Low., it differs especially by the fuscous palpi and face.

Broken Hill, New South Wales; one specimen in October.

Darantasia perichroa, n. sp.

Male, 26 mm. Head, thorax, and abdomen greyish-fuscous, head and thorax sometimes reddish-tinged. Antennæ fuscous, ochreous on basal one-third. Palpi and face dark fuscous, nearly black, basal half of palpi beneath sharply white. Legs fuscous. Forewings elongate, triangular, costa gently arched, termen obliquely rounded; greyish-fuscous, minutely sprinkled with fuscous; costa rather broadly reddish and sometimes strigulated with blackish; markings blackish, obscure; a small spot on innermargin beyond one-third, a second above in middle; a small discal spot; a dot on innermargin at three-fourths, and another on fold above; indications of a subterminal series of spots; a row of spots along termen; cilia greyish, mixed with fuscous. Hindwings pale silvery-grey; veins 6 and 7 sometimes from a point, separate, or stalked; a fuscous discal dot; dots along termen and cilia as in forewings.

The variation of veins 6 and 7 of hindwings is unusual. The species has considerable superficial resemblance to some species of *Taxeotis*, notably *isophanes*, Meyr., but the antennæ indicate its correct position with certainty. I possess what may possibly be the female of this species; it is much smaller (20, mm.), yet the markings are nearly identical, including the reddish tinge of thorax, head, and costa; and the termen of forewings is nearly straight.

Stawell, Victoria; three specimens in September.

Nearcha oxyptera, n. sp.

Male, 40 mm. Head, thorax, and abdomen greyish ochreous minutely irrorated with blackish scales. Palpi 3, deep ferruginous, basal third whitish beneath. Antennæ ochreous. Anterior legs ochreous. (Middle and posterior pair broken.) Forewings elongate, triangular, termen bowed, gently waved, sinuate beneath apex, apex acute; vein 2 strongly curved and bent down so as to almost touch vein 1; dull ochreous, minutely irrorated throughout with fuscous; costal edge ochreous-ferruginous throughout; a black dot at base; indications of a curved series of black dots from one-third costa to one-third innermargin; a moderately large fuscous discal dot; a dull ferruginous shade, anteriorly edged by a series of obscure blackish spots, from costa at two-thirds to innermargin at two-thirds, gently curved outwards on upper half; an obscure transverse series of blackish subtriangular spots, more or less forming an interrupted shade; a row of black spots along termen; cilia ochreous-grey, becoming fuscous-tinged on basal half. Hindwings with termen hardly rounded, nearly straight, faintly waved; a moderate dark fuscous discal spot at one-third from base; ferruginous shade, subterminal markings, spots along termen and cilia as in forewings. Forewings beneath with a moderate tuft of curled hairs in cell; veins 2, 3, 4, and 5 somewhat raised and clothed with short hairs; spots along termen as above. Hindwings beneath with a large subcostal tuft of ochreous-grey hairs from base to one-fourth, becoming fuscous at posterior extremity, where they form a tuft; a large double patch of similar hairs in middle, and a ridge of ochreous hairs beneath, space between more or less hyaline; spots along termen as above.

Allied to *buffalaria*, Gn., but differs in shape of wing and especially by the tufts on underside of *forewings*. The curious formation of vein 2 and thickening on others mentioned are very noticeable points; it occurs in both forewings. It is highly probable that the posterior tibiæ will reveal additional peculiarities.

Illawarra, New South Wales; one specimen in November.

Nearcha pyrosema, n. sp.

Male and female, 24-26 mm. Head and thorax pale greyish-ochreous, head more ochreous. Antennæ grey-whitish, pectinations blackish. Face and palpi ferruginous-blackish, palpi hardly 2, basal two-thirds beneath white. Abdomen pale greyish-ochreous, anterior segmental margins somewhat ochreous. Legs greyish-ochreous, posterior tibiæ dilated and

containing pencil of long black hairs. Forewings elongate, triangular, termen gently rounded, oblique; pale ochreous-grey, minutely irrorated throughout with blackish scales; a reddish spot on innermargin at one-third, with indications of one or two similar spots above; a moderately large black greyish-centred discal spot; a transverse series of light reddish-ferruginous spots from costa at three-fourths to innermargin at three-fourths, sometimes obsolete towards costa, most distinct on lower third and gently curved throughout; a pale fuscous parallel shade between spots and termen; a pale fuscous shade along termen; a row of black spots along termen; cilia greyish-ochreous. Hindwings with termen rounded; without tufts beneath; color, discal spots, and cilia as in forewings; other markings faintly indicated in female; strongly pronounced in male, but reddish markings become fuscous.

Probably between *ophla*, Swinh., and *anemodes*, Low.

Derby, Western Australia; two specimens, in November. Also from Tennant's Creek, Central South Australia.

Dichromodes orthozona, n. sp.

Male and female, 24 mm. Head, palpi, and thorax fuscous, thickly irrorated with whitish scales, palpi in male 2, in female 2½, beneath dark ferruginous fuscous, basal half white. Antennæ fuscous, pectinations nearly 6. Abdomen fuscous, thickly irrorated with whitish scales, especially beneath, basal, segment narrowly white. Legs fuscous, thickly irrorated with whitish scales, tibiæ and tarsi more or less ringed with ochreous-white. Forewings elongate, triangular, termen rounded, faintly waved; fuscous mixed with dark fuscous and irrorated with white; basal third ferruginous-ochreous; an obscure short ferruginous mark at base; a moderately broad fuscous-whitish median band, edges evenly waved; edged anteriorly by a moderately thick nearly straight ochreous-white line, containing a fine ferruginous median line throughout, from costa at one-third to innermargin at one-third, gently curved inwards; posteriorly by a similar nearly straight ferruginous centred line, somewhat dilated on costa, from costa at about two-thirds to innermargin at two-thirds; a large somewhat quadrate black discal spot on median band above middle, resting on an obscure bar of whitish fuscous; a similar bar along fold; the discal spot is edged above and below by an obscure streak of dull ochreous; subterminal line whitish, waved, forming a moderate projection above, below, and in middle, last more prominent; edged anteriorly through-

out by a moderate, thick parallel fuscous shade, the posterior edge of which is parallel to limiting line of median band; a blackish line along termen; cilia whitish, mixed with fuscous and barred with blackish. Hindwings with termen rounded, hardly waved; fuscous; a faint darker discal dot; a darker curved postmedian line, followed by an obscure whitish parallel line; line along termen and cilia as in forewings.

Apparently nearest *compsotis*, Meyr., but apart from the longer antennal ciliations, it may be at once recognised by the almost straight limiting lines of median band, thus recalling *orthotis*. The palpi of male are distinctly shorter than female.

Roeburne, Western Australia; two specimens in November.

Dichromodes aristadelpha, n. sp.

Male, 26 mm. Head and palpi whitish-grey, palpi 2½, beneath white, ferruginous on sides and with a small snow white subapical spot on terminal joint. Antennæ fuscous, pectinations 2½. Abdomen ashy-grey-whitish, with obscure blackish marginal rings. Legs dark fuscous, irrorated with minute whitish scales, tibiæ and tarsi banded with ochreous. Forewings elongate, triangular, termen gently waved, rounded; ochreous, somewhat mixed with ferruginous-fuscous; a short black outwardly oblique line near base, hardly reaching innermargin; median band dark fuscous, well defined, limiting lines black; anterior edge from just beyond one-fourth of costa to about middle of innermargin, strongly curved inwards on upper two-thirds, and with a sharp angulation above innermargin; edged anteriorly throughout by a narrow parallel ochreous-white line, which line is anteriorly edged by a suffused fuscous line; posterior edge from about two-thirds costa to two-thirds innermargin, sinuate inwards above and below middle, causing median third to become prominently rounded; a narrow parallel ochreous-white line immediately following; a fuscous-whitish quadrate discal spot, edged on either side with a black line; a thick black bar connecting margin of band below middle; subterminal cloudy, silvery-grey, rather strongly sinuate inwards above and below middle, edged posteriorly by an irregular parallel ferruginous line; a shaply defined black spot resting on innermargin near anal angle, inclining to separate into 2 spots; a silvery-grey band along termen, anterior edge parallel to ferruginous line; a fine waved black line along termen; cilia grey-whitish, mixed with fuscous, terminal half grey, with fuscous bars, dividing line distinct. Hindwings with termen waved, rounded; dark

fuscous; a fuscous discal spot; a fine waved fuscous line from costa beyond middle to innermargin beyond middle, sharply indented in middle and becoming edged with whitish towards innermargin; a double black spot near anal angle; a narrow silvery-white mark below; line along termen as in forewings; cilia dark fuscous, terminal half grey, division distinct.

Very closely allied to *partitaria*, Walk., but differs by the totally different coloring and shape of first line besides other details. It is a prettily marked species.

Henley Beach, South Australia; one specimen in September.

HYPOGRAPHA CYANORRHŒA, n. sp.

Male, 24 mm. Head, palpi, and thorax bluish-white, fuscous tinged, face with a long bidentate projecting plate, projections acute, exposed, antennæ and legs fuscous. Forewings elongate, triangular, termen deeply waved on upper half, with a prominent projection in middle, sinuate inwards on lower half; fuscous; a very oblique moderately thick fuscous line from one-fourth innermargin to costa very near apex, wing between this and base fuscous, somewhat mixed with bluish-white, and with fine oblique fuscous parallel lines on costal portion; posterior area of wing beyond thick fuscous line bluish-white, gradually shading into fuscous to termen, and with fine waved fuscous anterior lines, parallel to first; a black line along termen; cilia bluish-white, fuscous at base. Hindwings with termen as in forewings, but median projection less pronounced; 6 and 7 stalked; bluishwhite; basal one-third tinged with fuscous, limited by a fainter darker line; a faint fuscous discal dot; a fine waved fuscous line, nearly straight, beyond middle, followed by a moderate parallel fuscous shade; a broader shade along termen; cilia fuscous, with some whitish scales at base.

Distinct from the other described species by the bidentate frontal projection, arrangement of lines and small size.

Alice Springs, Central South Australia; one specimen in November.

GEOMETRIDÆ.

XENOCHLÆNA, n. g.

Face somewhat rounded. Palpi moderate, porrect, with closely appressed scales, terminal joint short. Antennæ moderate, bipectinated to apex. Post tibiæ not dilated. Forewings with 6 out of 9 near base; 10 free, from base of 9; 11 rising separate, somewhat connected with 12 at costa. Hindwings 5 nearer 6 than 4; 6 and 7 stalked; 8 free, somewhat approximated to cell near base.

Type *porphyropis*, Lower. (P. L. S., N.S.W., 42, 1898.)

This genus is formed to receive the above. I formerly placed it in the genus *Arrhodia*, but it is properly referable to the *Geometridæ*.

The original specimen is still unique.

SELIDOSEMIDÆ.

Scioglyptis trisyneura, n. sp.

Male, 26 mm. Head, palpi, thorax, and abdomen grey-whitish, thorax with moderate bifid posterior crest, face with obtuse horny projection. Palpi long, 2 densely haired beneath. Antennæ greyish, bipectinated pectinations 6 (apex broken). Legs greyish-fuscous, posterior pair whitish, posterior tibiæ dilated enclosing tuft of hairs. Forewings elongate, triangular, termen obliquely and gently rounded; 10, 11, and 12 free, nearly parallel; grey-whitish, obscurely irrorated with fuscous; fovea well developed, somewhat striated beneath; markings fuscous, very obscure, lines scarcely traceable; first dentate, from costa at one-fourth to innermargin at one-fourth, dot like on margins; median line nearly straight, followed by a parallel line, more oblique, somewhat beyond; a distinct discal dot; a very dentate, oblique line from five-sixths costa to anal angle, emitting a streak from above middle to below apex; a row of dots along termen; cilia greyish. Hindwings with termen rounded; white on basal two-thirds, rest of wing light fuscous; a small fuscous discal spot; median shade faintly indicated, distinct on innermargin; an obscure waved subterminal line, distinct on innermargin; dots along termen and cilia as in forewings.

An obscure looking insect; the horny frontal prominence, crested thorax, neuration (which may vary) and dilated posterior tibiæ are, I hope, sufficient characters to recognise it. It is nearest *lithinopa*, Meyr. The antennæ are unfortunately damaged; the crested thorax, although not in accordance with the genus, are too trivial to separate the species generically, especially when the variations of neural characters of the genus are considered, consequently I prefer to place it here.

Arltunga, Central South Australia; one specimen in November.

Pachytyla, n. g.

Face somewhat rounded, with appressed scales, palpi moderate, porrected, thickly scaled, terminal joint very short. Antennæ in male bipectinated to apex. Thorax not crested. Abdomen with lateral crests. Femora glabrous, posterior

tibiæ strongly dilated, enclosing tuft of long hairs, posterior tarsi very short about half of tibiæ. Forewings with moderate fovea; 12 free, 10 and 11 stalked; 7 and 8 out of 9. Hindwings normal.

Probably nearest *Selidosema*, Hb., but the antennæ and legs are sufficient generic distinction.

Type *doliopa*, Low.

Pachytyla doliopa, n. sp.

Male, 30 mm. Head, face, and antennæ dark fuscous, antennal pectional 3 at greatest length. Palpi ashy grey-whitish, fuscous above. Thorax deep ferruginous-fuscous, collar broadly ashy-grey-whitish, division distinct. Abdomen strongly margined laterally, dark fuscous, with suffused whitish segmental bands. Legs ashy-grey-fuscous, posterior tibiæ strongly dilated containing pencil of long white hairs, tarsi very short, less than one-half of tibiæ. Forewings elongate, triangular, termen gently and evenly waved, dark cinereous-fuscous, obscurely mixed with ferruginous; fovea moderate; markings black, well defined; a fine inwardly oblique line close to base; a fine, somewhat waved line from one-third costa to one-third innermargin, slightly indented above middle; a similar line from near middle of costa to middle innermargin; a third similar line, less waved, from two-thirds costa to two-thirds innermargin; a strongly dentate line from three-fourths costa to innermargin before anal angle, edged anteriorly by a moderate shade of ferruginous throughout, dentations tending to be carried along veins, especially above and below middle; an inwardly oblique streak from just below apex; a waved line along termen; cilia ashy-grey-fuscous, with blackish bars at extremities of veins. Hindwings with termen waved; white tinged with fuscous; lines of forewings, except basal more or less indicated; a moderate fuscous band along termen, becoming narrowed towards anal angle; cilia white, barred with fuscous.

Very similar in general appearance to a small specimen of *Stibaroma melanotoxa*, Meyr.

Broken Hill, New South Wales; one specimen in June. I have seen a specimen from Brisbane, Queensland.

Angelia, n. g.

Face with horny projecting plate. Palpi moderate, porrected, rough scaled, terminal joint rather short. Antennæ in male bipectinated to apex. Thorax somewhat crested, rather hairy beneath. Femora glabrous, or slightly hairy.

Posterior tibiæ more or less dilated. Forewings in male with well developed fovea; 10 connected on anastomosing with 12 and 9, 11 rising out of 10 between connections. Hindwings normal.

Type *tephrochroa*, Low.

Allied to *Amelora*, Meyr., on the one hand, and *Chlenias*, Gn., on the other; differing from the former by the horny projecting plate of face and well marked fovea of forewings; which latter character also separates it from *Chlenias*.

I have dedicated the genus to my friends, Messrs. S. and F. Angel, in recognition of their enthusiastic work and continued kindness.

Angelia tephrochroa, n. sp.

Male, 38 mm. Head dull ochreous-whitish, face with moderate horny projection, rounded truncate. Palpi and antennæ fuscous, antennal pectinations at greatest length 6. Thorax light slaty-grey, finely irrorated with blackish. Abdomen and legs pale slaty grey. Forewings pale slaty-grey, finely irrorated throughout with blackish scales; fovea well developed, costal edge sometimes edged throughout narrowly with orange fuscous; a reddish-ferruginous line of about 5 dots, interrupted, from costa at one-third to innermargin at one-fourth; a similar colored dentate line from four-fifths costa to innermargin before anal angle, both lines sometimes absent; a large somewhat quadrate black discal spot; cilia greyish-ochreous. Hindwings ochreous-grey, finely irrorated with fuscous, except basal third; a moderate fuscous discal spot; cilia as in forewings.

Probably nearest *platydesma*, Lower.

Broken Hill, New South Wales; two specimens in May.

Angelia platydesma, Lower.

(*Amelora platydesma*, Lower. T.R.S., S.A., 1901, 65.)

Angelia heteropa, Lower.

(*Amelora heteropa*, Lower. T.R.S., S.A., 1901, 64.)

I refer the two above species to this genus; the fovea is well developed in both.

Angelia callisarca, n. sp.

Male, 30 mm. Head and thorax fleshy-carmine, face with a prominent tridentate plate, median projection long, tolerably acute, thorax beneath tinged with fleshy carmine. Antennæ fuscous, pectinations at greatest length 6. Abdomen ochreous-grey. Palpi fuscous-grey. Legs fuscous, pos-

terior pair greyish-ochreous. Forewings elongate, triangular, costa gently arched, termen oblique, hardly bowed; bright fleshy carmine, with deep fuscous-carmine markings; fovea moderate; a narrow transverse fascia, from one-fourth costa to one-fourth innermargin, upper half outwardly oblique, thence strongly curved inwards below; a large discal spot; a moderate, slightly oblique, thick, strongly dentate line, posteriorly edged with obscure ochreous, from costa at about four-fifths to innermargin at three-fourths, gently curved inwards on lower half; an obscure line along termen; cilia fleshy-carmine. Hindwings with termen rounded; 6 and 7 from a point; fuscous-whitish, paler on basal half; discal dot and second line fuscous, marked as in forewings; cilia fleshy-carmine.

Allied to *heteropa*, but apart from the longer antennal pectinations, it is immediately recognisable by the curious tridentate horny plate of forehead, which in *heteropa* is broadly truncate.

Broken Hill, New South Wales; one specimen in April.

Paramelora, n. g.

Face nearly flat, hardly prominent. Palpi moderate, porrected, rough scaled, terminal joint very short. Antennæ in male bipectinated nearly to apex, last four apical joints dentate. Thorax slightly hairy beneath. Posterior tibiæ hardly dilated. Forewings in male with small fovea; 10 connected with 12 and 9; 11 absent (rarely present (?)); 12 sometimes free. Hindwings normal.

This genus is allied to the preceding, but differs by the flat face, neuration, &c. In one forewing of a female 11 runs out of 12 from just beneath costa, in the other wing of the same specimen it is absent, so that I consider it an accidental deformity occurring in the individual in question, as the other species have the neuration as mentioned, but vein 12 sometimes hardly touches 9.

Type *zophodesma*, Low.

Paramelora zophodesma, n. sp.

Male, 20-24 mm. Head and thorax cinereous-grey. Palpi whitish, fuscous beneath. Antennæ fuscous, pectinations at greatest length 6. Legs fuscous-grey. Abdomen greyish. Forewings elongate, triangular, termen gently rounded, oblique; fovea moderate; dull white, suffusedly mixed with blackish, and finely irrorated with fuscous, so as to appear ashy-grey-whitish; a moderate thick black streak from costa

at one-fourth to innermargin at one-third, angulated beneath costa, thence almost straight, edged anteriorly by its own width, with a moderately clear white space, sometimes absent; a moderately thick black streak from costa before three-fourths to innermargin at two-thirds angulated outwards in middle and edged as in first streak; ground-color between first and second black lines much darker, and with strong indications of a similar angulated streak in middle, in one specimen well developed; a thick blackish, nearly straight suffused subterminal band, posterior edge irregular, anterior parallel to edge of second whitish streak; a row of black dots along termen; cilia cinereous-fuscous. Hindwings with termen rounded: greyish, finely strigulated throughout with fuscous, more dense beyond middle; two or three obscure whitish teeth on innermargin towards anal angle; cilia as in forewings. Costa of forewings beneath ochreous.

Broken Hill, New South Wales; two specimens in October and May.

PARAMELORA LYCHNOTA, Lower.

(*Xanthorrhœ lychnota*, Lower. P.L.S., N.S.W., 1900, 404)

I refer this species to this genus; fovea well defined.

RHYNCHOPSOTA, n. g.

Face with appressed scales. Palpi very long, with appressed scales, terminal joint concealed. Antennæ of male bipectinated to apex. Thorax smooth. Posterior tibiæ moderately dilated. Forewings without fovea; 7 and 8 out of 9, 10 out of 9; 11 connected with 9 at a point; 12 free; without fovea. Hindwings 5 absent, 6 and 7 separate; 8 closely approximated to cell in middle with a long pencil of hairs lying at base beneath.

A peculiar genus, not very near any other in the group, the long palpi and hairs on hindwings beneath are rather unusual characters. The single species bears considerable superficial resemblance to *Crunophila ramostriella*, Walk. (*Pyralidina*).

Type *delogramma*, Low.

RHYNCHOPSOTA DELOGRAMMA, n. sp.

Male, 34 mm. Head and palpi white, palpi ochreous fuscous on sides. Thorax white, palagia and a longitudinal median streak fuscous-ochreous. Antennæ fuscous, pectinations 6 at greatest length. Abdomen whitish. Legs whitish. Forewings elongate, triangular, termen moderately rounded, oblique; ochreous-fuscous, with well defined whitish markings; ochreous-fuscous, with well-defined whitish markings;

a broad streak immediately beneath costa, attenuated posteriorly; a similar streak beneath first, only separated by a fine line of ground color, from one-third to termen, finely attenuated anteriorly, broadly dilated posteriorly and continued as fine streaks along veins to termen; a broad longitudinal streak in middle, becoming trifurcate posteriorly, first furcation emitted from lower edge in middle and continued along fold to termen; second similar at two-thirds; third on upper edge, both to termen; a fine line above innermargin throughout, connected at base with median streak; cilia fuscous, with whitish streaks at extremities of veins. Hindwings with termen faintly sinuate in middle; pale ochreous-whitish; a fuscous band along upper half of termen, more pronounced beneath; a moderately long pencil of ochreous hairs beneath, rising at base; cilia ochreous-whitish.

Hobart, Tasmania; one specimen in November.

Gastrinopa, n. g.

Face rounded, somewhat prominent. Palpi moderate, densely scaled, terminal joint short. Antennæ of male bipectinated nearly to apex, apex simple. Thorax without crests (?), densely hairy beneath. Abdomen smooth. Femora glabrous, posterior tibiæ of male strongly dilated, containing pencil of hairs. Forewings without fovea; 12 free; 10 and 11 rising separate, thence anastomising on median third, thence separating; 10 slightly connected with 9. Hindwings normal.

Differs from *Gastrina*, Gn., to which the species has remarkable superficial resemblance by the neuration and abdomen. The thorax is somewhat denuded, consequently I am unable to decide if the crest is present or not.

Type *xylistis*, Low.

Gastrinopa xylistis, n. sp.

Male and female, 36-38 mm. Head, palpi, antennæ, thorax, and abdomen dark ferruginous-fuscous. Antennal pectinations of male about 2½. Legs grey-whitish, thickly irrorated with ferruginous-fuscous. Forewings elongate, triangular, termen waved, rounded; ferruginous-fuscous, finely strigulated with transverse blackish markings; markings black; a gently curved line from one-third costa to one-third innermargin, faintly angulated above innermargin; a gently waved line from costa before three-fourths to innermargin at two-thirds, moderately curved inwards on lower half; ground color between first and second lines more blackish; an indistinct

discal dot followed by a patch of pale ochreous, anterior to second line; a fine waved line along termen; cilia fuscous. Hindwings with termen strongly waved; dull whitish finely strigulated with fuscous; especially on innermargin; a fuscous dot; a broad ferruginous-fuscous band along termen finely strigulated with blackish, paler on upper edge; line along termen as in forewings; cilia greyish, with a fuscous line.

Blackwood, South Australia; two specimens in October.

Amphicrossa hemadelpha, Lower.

I have recently obtained a single female specimen of this species. It only differs from the opposite sex as follows:—Antennæ dentate, strongly ciliated; hindwings more fuscous. The ciliated antennæ is a curious character shared by many species of *Chlenias*, Gn., and is a useful guide in recognising the different species. The insect formerly doubtfully described as the female of *hemadelpha*, is unquestionably the female of *Chlenias serina*, Lower, which, although very similar, and indeed could easily be mistaken for it, is immediately separated by the simple antennæ.

Broken Hill, New South Wales; one specimen in April.

TINEINA.

XYLORYCTIDÆ.

Cryptophaga melanoscia, n. sp.

Male and female, 40-50 mm. Head, palpi, thorax, and legs ashy-grey-whitish antennæ white, pectinations 5, orange yellow. Abdomen greyish, segmental margins dull orange; second broadly dull orange. Forewings elongate, moderate, costa in male nearly straight, in female arched, termen obliquely rounded; 2 from about two-thirds, 11 from middle; ashy-grey-whitish, finely irrorated throughout with short black scales; markings black; a short streak from costa near base to lower margin of cell, angulated in middle; a short thick mark in cell at one-third; a second, similar at end of cell; lower margin of cell outlined in black; from first mark proceeds a fine line to two-thirds of costa; veins towards termen more or less outlined with black, becoming very pronounced in middle of veins 5 and 6; 5 or 6 dull whitish spots, between middle of costa and apex, separated by dull fuscous marks: cilia ashy-grey-whitish chequered with black. Hindwings with termen rounded, in male somewhat sinuate before anal angle; greyish-fuscous, becoming lighter on basal half; cilia greyish.

Intermediate in form between *irrorata*, Lew., and *leucadelpha*, Meyr., differing especially from the former by the hindwings and from both by the well defined blackish markings of forewings.

Birchip, Victoria; two specimens received from Mr. D. Goudie, who bred the species from *Casuarina, sp.*, in October.

Cryptophaga diplosema, n. sp.

Male and female, 40-50 mm. Head, thorax, and palpi fleshy white, thorax on posterior two-thirds reddish-ochreous. Antennæ white, pectinations 4, ochreous. Legs fleshy red, hairs of posterior pair orange. Abdomen orange, beneath fleshy red. Forewings elongate, moderate, costa arched, rather strongly in female, termen obliquely rounded, 2 from three-fourths, 3, 4, and 5 closely approximated at base; 4 and 5 stalked in male; reddish-ochreous, much paler in male; costa moderately pale fleshy white, from base to two-thirds, broadest on basal portion; a deep red somewhat quadrate patch on innermargin at one-sixth, reaching half across wing; a similar patch at about middle; a thick, deep red streak from upper edge of first spot, longitudinally continued to beyond second spot; markings very obscure in female; cilia deep reddish. Hindwings and cilia orange.

This insect has stood in my collection for some years as *phœthontia*, Meyr., but, having received a male from Mr. Dodd, of Townsville, Queensland, I consider it distinct from that species. It differs by the orange abdomen and hindwings, besides the other details. It has considerable resemblance to *rubescens*, Lew., but the strongly arched costa, rounded termen, and shorter antennal pectinations are sufficient to distinguish it from that species.

Duaringa, female; Townsville, male (*Dodd*), Queensland, in November and December two specimens.

Procometis tetraspora, n. sp.

Male and female, 24 mm. Head, palpi, antennæ, and thorax ashy-grey-whitish, second joint of palpi fuscous externally except apex. Legs ashy-grey-whitish, anterior and middle tibiæ and tarsi dark fuscous, ringed with whitish. Abdomen dull reddish ochreous, with silvery-grey segmental margins. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 to apex or immediately above; ashy-grey-whitish; costal edge narrowly whitish on posterior half, and streaked with fine inwardly oblique fuscous marks; a fine white streak along fold from base to anal angle, less defined in male; a fuscous spot in disc at one-third; a second

obliquely below and beyond; and a third at posterior end of cell, connected with first by a white streak; indications of a fourth below third; cilia cinereous-grey, terminal half grey. Hindwings light fuscous; 3 and 4 from a point; 6 and 7 from a point, hardly short stalked; cilia whitish grey in female, darker in male, both sexes with fuscous subbasal line.

Not very near any other described species, but probably nearest *monocalama*, Meyr. It has a striking resemblance to *Hypertricha ephelota*, Meyr., but the palpi and presence of vein 8 of forewings are distinct.

Melbourne, Victoria; two specimens in March.

Procometis periscia, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, and legs ashy-grey-whitish, palpi infuscated on second joint externally, thorax with 2 or 3 obscure whitish longitudinal streaks, patagia whitish. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 to slightly above apex; dark fuscous, more or less minutely irrorated with fine whitish scales; a fine white line along fold, from base to anal angle; a fine white line in middle of wing, from near base to near base to near three-fourths, attenuated anteriorly and edged above with a fine black line; veins towards termen more or less outlined with blackish; cilia ashy-grey-fuscous. Hindwings with veins 3 and 4 from a point; 6 and 7 short stalked; rather dark fuscous; cilia greyish with a fuscous basal line.

Melbourne, Victoria; one specimen in March.

Macrozygona, n. g.

Head smooth, antennæ moderate, in male filiform, simple, basal joint moderate, without pecten. Labial palpi long, curved, ascending, terminal joint nearly as long as second. Thorax smooth, abdomen moderate. Posterior tibiæ rough haired above. Forewings with vein 2 from four-fifths, 3 from angle, 7 absent, coincident with 8. Hindwings with hairs of costa moderately developed beneath; 3 and 4 very short stalked; 6 and 7 stalked.

A connecting link between *Phylomyctis* and *Hypertricha*, but most allied to the former, from which it differs by the palpi of male, and stalking of veins 6 and 7 of forewings.

Macrozygona microtoma, n. sp.

Male, 16 mm. Head whitish, face white. Palpi, antennæ, and thorax ochreous fuscous, palpi white on lower two-thirds of second joint externally. Antennæ whitish on basal one-third. Legs white, fuscous above. Abdomen greyish-

ochreous, white beneath. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; ochreous-fuscous; a white costal streak from near base to three-fourths, attenuated at extremities; a rather broad irregular white streak along fold, becoming somewhat blotch-like at posterior extremity and continued to anal angle, where it is constricted; a suffused whitish spot at apex; cilia ochreous fuscous. Hindwings light ochreous-fuscous, somewhat shining; cilia grey, with fuscous parting line.

Melbourne, Victoria; one specimen in March.

HYPERTRICHA EPHELOTA, Meyr.

I have received females of this species, which measure 40 mm. in expanse. It differs very little from the male as regards markings and color, excepting that the whitish streak of forewings is less defined; in fact, all the markings of the forewings are suffused through the blackish coloring. The hindwings beneath are without any costal hairs (in the male they are well developed), and veins 3 and 4 of the hindwings are connate or nearly separate at origin in two specimens; and in one specimen actually stalked, so that in determining the genus this peculiar irregularity should not be lost sight of. The terminal joint of the palpi is similar to male—that is, one-fourth of second joint.

An Analysis of the Ash of the Acacia Salicina.

By A. J. Higgin.

[Read August 4, 1903.]

Some time ago Professor Stirling suggested that it would be of interest if an analysis of the ash of the *Acacia salicina* were made with a view of ascertaining whether it exhibited any material difference from the ashes of other plants.

The ash of the *Acacia salicina* is used by the natives of Australia for mixing with pituri before mastication. An account of the preparation and use of this substance has been kindly supplied to me by Professor Stirling.

Pituri consists of the dried leaves and twigs of *Dubosia Hopwoodi*, natural order, Solinaceæ.

It is the masticatory or chewing substance extensively used for the sake of its stimulant and narcotic properties by the natives of a large tract of Eastern Central Australia, extending northwards from Cooper's Creek and including parts of South Australia, New South Wales, and Queensland. The leaves and twigs are gathered about August, when the plant is in flower. These are sweated beneath a layer of fine sand, dried, roughly powdered, and then packed in netted bags or skins for transport, in which form it serves as an important article of barter with neighboring tribes. Before use the pituri is damped, mixed with the ashes of the leaves and twigs of certain shrubs, usually those of the *Acacia salicina* (certainly in the district from which the specimen used for analysis came, and probably in others), and rolled up into a "plug." This is chewed, the saliva swallowed, and if the natives are in company, the plug is handed from one to another.

Pituri is also employed in Central Australia for poisoning emus, even in parts where it is not used for mastication. For this purpose a bundle of the twigs is placed in a small waterhole. On drinking the water the birds become stupefied, when they are easily killed.

The pituri plant is restricted to Australia, and is of scattered occurrence throughout the dry zone, mainly between S. lat. 27 and 21. The wood ash is probably mixed with the pituri for the purpose of slowly liberating the alkoloid (piturine, $C_{12}H_{16}N_2$) contained in it during the process of mastication. This is brought about by the alkali contained in the ash; in this case caustic lime.

A paper dealing with the preparation and properties of piturine was published some years ago by Professor Liversidge, "The Alkaloid from Piturie."* It is a liquid strongly resembling nicotine in properties.

Its physiological action is discussed by J. N. Langley, F.R.S., and W. Lee Dickenson, M.B., M.R.C.P., of Cambridge, in a paper entitled "Pituri and Nicotine."† In this paper the authors state that "The main results of our experiments, as far as the action of pituri is concerned, can be given in a few words. The physiological action is identical with that of nicotine."

The material handed to me for analysis by Professor Stirling consisted of several small branches with the leaves attached. The locality from which it was obtained is the Warburton River, near the north-east corner of Lake Eyre, and it was determined by the late Professor Tate to be the *Acacia salicina*. A quantity of the leaves was burnt in a platinum dish, and heated till all organic matter was destroyed. The ash was strongly alkaline to litmus paper, and was almost completely soluble in hydrochloric acid with evolution of a little carbon dioxide gas.

The results of the analysis were as follows:

Silica	SiO_2 ...	1.86%
Lime	CaO ...	40.70
Magnesia	MgO ...	3.18
Ferric oxide	Fe_2O_3 ...	.27
Potash	K_2O ...	3.41
Soda	Na_2O ...	1.01
Sulphuric anhydride ...	SO_3 ...	30.09
Phosphoric anhydride ...	P_2O_5 ...	1.94
Chlorine	... ...	5.54
Carbon dioxide moisture ...	... ...	12.00
		100.00

These results may be a little low as regards the potash and soda, because no special precautions were taken to prevent loss of these substances by volatilization. The temperature at which the leaves were burned was not, however, high.

It will be seen from the analysis that this ash contains a very high percentage of lime and sulphuric anhydride. The latter, calculated as calcium sulphate, shows 51.15 per cent. of that substance. This leaves 21.06 per cent. of lime present as CaO and Ca CO_3. As already mentioned, there was only

* Proceedings of the Royal Society of New South Wales, vol. xiv., p. 123.

† Journal of Physiology, vol. xi., p. 265.

a small amount of carbon dioxide gas evolved on dissolving the ash in hydrochloric acid, so that the lime not present as calcium sulphate would be present chiefly as calcium oxide, CaO. It is this substance which liberates the piturine during mastication

The presence of such a high percentage of calcium sulphate seemed to me to be remarkable and it was thought that a comparison of this ash with some others obtained from Australian bushes would prove interesting. Professor Rennie kindly pointed out to me that some years ago Mr. W. A. Dixon, of Sydney, had made some analyses of the ash of various Australian bushes. His results were published in the Proceedings of the Royal Society of New South Wales, vol. xiv. I referred to this paper, and found that in no case does any analysis, out of the eight given, show the presence of more than 4.5 of sulphuric anhydride, and that the lime present is very much less than in the ash of the *Acacia salicina.*

I give two of the determinations of sulphuric anhydride and lime made by Mr. Dixon:

	(1) Dwarf Saltbush (*Atriplex sp.*).			(2) Cotton Bush (*Chenolea bicornis*).	
Lime	CaO	17.74%	...	CaO	24.33%
Sulphuric anhydride	SO_3	4.43	...	SO_3	3.95

An analysis of the ash of the *Alstonia constricta*, "Fever bark," published by Mr. Maiden, shows a higher percentage of lime and sulphuric anhydride than the above, viz.:

Lime	CaO	...	32.83%
Sulphuric anhydride ...	SO_3	...	9.33

It will be seen that none of these ashes contain nearly so much lime and sulphuric anhydride as the ash of the *Acacia salicina.*

There does not appear to be much published matter with regard to the ashes of plants, &c., and it is impossible, therefore, to make an extensive comparison of this ash with others. Phillips and Bauerman, in their work on Metallurgy, give a few analyses of the ash of some European woods, and I find from these that the percentage of calcium sulphate present is less than it is in the ashes of the Australian woods already mentioned.

The results given below are calculated as calcium sulphate:

1. Beech, from Switzerland ...	2.3%	...	$Ca\ SO_4$
2. Scotch Fir, from Giessen ...	3·31	...	$Ca\ SO_4$
3. Scotch Fir, from Giessen ...	5.05	...	$Ca\ SO_4$

It seems to me that there is little doubt that the calcium sulphate is present in the ash of the *Acacia salicina* in much larger quantity than in any other ash at present known to us.

Notes on Supposed Volcanic Dust from the Northern Territory.

By Professor Rennie, M.A., D.Sc., and A. J. Higgin, F.I.C.

[Read August 4, 1903.]

The following is a portion of a letter received by us from Sir Charles Todd in December, 1902:

"I have just received the enclosed telegram from Mr. Christie, lighthouse keeper at Point Charles, who has collected some of the supposed volcanic dust which has been resting on Northern Australia for some weeks past, and is supposed to have come from Martinique."

The telegram referred to in the above extract is as follows:

"Profiting by the experiments made by Mr. Bleeser in catching volcanic dust, it occurred to me that the lighthouse windows would be an ideal catchment, and I had noticed before I left that they were becoming dusty. On arrival here, however, I found that 115 points of rain had fallen, which, of course, eliminated all signs of dust, washed the glass clean, and effectually laid any local dust. This was Saturday, November 22nd. Noted on the 23rd that smoke with the same peculiar smell was about, but not so thick; 24th still smoky. Tried window panes, and could detect a little dust on white rag. 25th still smoky. Thinking rain would probably fall, decided to do as follows: Took 4 gallons water, jug, washbasin, and empty bucket. Placed washbasin under window ledge, and with jug poured water on the top pane. This ran down the three panes 10 ft., and was caught in the basin and transferred to bucket, and so on. I thus washed over 300 superficial feet of glass with running water only; the result a bucket of dirty water. This was covered, and stood to settle for two days; the water syphoned off. The bottom half a pint placed in a glass tumbler, and settled for one day; the remainder of water syphoned, and the tumbler stood near the fire till contents evaporated to dryness. The residue, only a few grains, I am sending to you. It looks very like volcanic ash. I may mention that during this period of dust or smoke catching the wind was from north-west and north-east, and once only for a short time east. The lighthouse windows are 120 ft. above sea level, and all these winds blow directly off the sea. The nearest land north-west would be Bathurst Islands,

45 miles; north, Melville, 35 miles; north-east, nearest land 25 miles; east, nearest land 14 miles. Further, 115 points of rain having fallen, the ground was well saturated, and there is no traffic, nor are there any roads here to create local dust; hence this must be purely atmospheric, wherever it comes from. In looking at the dust with a small magnifier some small white specks can be seen. These probably are pieces of paint (white zinc) washed off the astragals of the windows in the downward flow of water."

Sir Charles Todd kindly forwarded the sample of dust, referred to, to us for examination. An examination with a magnifying glass at once showed that the sample consisted largely of organic fibres of some kind, with the specks of white paint referred to by Mr. Christie. The whole weighed only 0.2948 gramme. The residue after ignition weighed 0.201 gramme, and of this 0.009 consisted of oxide of lead. The small quantity of the sample, combined with the presence of so much impurity, rendered any attempt at a complete chemical analysis useless. An estimation of silica, however, gave 63.06 per cent., after estimating and allowing for the oxide of lead present in the ignited residue. This is somewhere about what might be expected from a volcanic dust. An account of a thorough microscopic examination, which confirms the theory of the volcanic origin of this dust, will be found in a separate note by Mr. Woolnough.

Microscopic Examination of Supposed Volcanic Dust from the Northern Territory.

By W. G. Woolnough, B.Sc., F.G.S.

[Read August 4, 1903.]

The material is very fine in grain, so that microscopic examination is difficult. It is of such a heterogeneous character that detailed description is almost impossible. The most abundant determinable constituents are long organic fibres with relatively bright polansation colors. Next in abundance come spicules of various shapes—anchor-shaped, dumb-bell-shaped, and so on. These consist of silica, and are quite isotropic. They are derived, probably, from holothurians and sponges. Fragments of foraminifera (Globigerina ?) can be detected. Each chamber gives the characteristic cross between crossed nicols. The truly volcanic material is subordinate to the other constituents.

Felspar in perfectly glassy granules are moderately plentiful. It shows no trace of twinning, so far as I have been able to determine. Some sections are bounded by cleavages more or less marked. The refractive index is in all cases higher than that of xylol balsam.

Magnetite is fairly considerable in amount, and includes some of the largest fragments. It is somewhat remarkable that this, the mineral of highest specific gravity, should be present in such comparatively large fragments.

Much dark brown glass is observable. It is filled with minute hair-like microlites, which are faintly doubly refracting. There is a small amount of pyroxene. Whether this is rhombic or monoclinic I cannot determine, as the fragments are very minute. A faint greenish-yellow color can be detected, and the double refraction is noticeably of a higher order than felspar.

An occasional piece of hornblende or biotite completes the list.

It has been suggested that this dust has been derived from the great West Indian eruptions of 1902. I am inclined to think that we must seek a nearer source for it. The abundance of magnetite has already been commented on. I think it improbable that such, comparatively, large fragments of this mineral, which possesses a specific gravity of 5.17, could drift half round the earth.

Descriptions of New Species of Corals from the Australian Tertiaries.

By J. Dennant, F.G.S.

[Read September 8, 1903.]

PART VI.

Plates I. and II.

Trochocyathus Maplestonei, *spec. nov.* Pl. i., figs. 1*a*, *b*.

The corallum is cuneiform and compressed from the calice downwards to the base, which is rounded and usually somewhat flattened inferiorly. Examples also occur with an almost pointed base. Amongst the smaller specimens some resemble the type in shape, while others are short squat forms with a flat base. The corals are free, but in one or two examples there is evidently a scar of former attachment. The calice is shallow, widely open, and elliptical; the ratio of the major and minor axes varies from 100 to 84, as in the type, to 100 to 91 in one of the short squat forms mentioned.

The septa are in six systems, with three cycles. The first and second orders are equal in thickness, and much stouter inferiorly than at their upper margins; the primaries also are slightly longer than the secondaries. The tertiaries are shorter and much thinner. All are exsert and granulose on their sides.

The columella is fascicular, and consists of one or more irregular processes. The pali are in two crowns, and are placed before the primary and secondary septa. In the figured example (the type) they have an irregular outline, which is partly at least due to wearing; a young individual shows fairly regular pali. They join the two first orders of septa, and also the columella, by short rod-like lateral processes. Below the prominent columella and pali there is in the type apparent solid matter, but this is no doubt due to secondary infilling, since in a small fractured example the central axis has a trabecular appearance. Most of my specimens have the calice more or less choked, and I have relied upon three only, including that figured, for my reading of the calicular structure.

The wall is stout and covered by a delicate epitheca, through which the costæ are visible from the summit of the coral down to the base. There are four orders of costæ, the first three

of which correspond to the septa. For about one-fourth from the calice these are broad and strongly marked, when they suddenly diminish to thin sinuous lines. Those of the fourth order have no septa corresponding to them, and consist of thin lines throughout. They are placed in each interspace, but do not, like the rest, rise above the wall, on the margin of which they show as very slender, sharply pointed projections.

The dimensions of the type are:—Height of corallum, 7.5 mm.; diameters of calice, 8 mm. and 6.75 mm. Two other specimens are slightly larger, and the rest smaller.

Locality, &c.—In Eocene strata at Brown's Creek (11 examples, most of which were collected by Mr. Kitson, the discoverer of this prolific coral bed). The species is also represented in my collection from the Eocene of Aldinga by three small flat-based individuals.

The species name is in compliment to Mr. C. M. Maplestone, the well known writer on tertiary polyzoa.

Trochocyathus infracompressus, *spec. nov.* Pl. i., figs. 2*a*, *b*.

The corallum is free, longer than broad, much compressed inferiorly, and scarcely so superiorly. The lateral edges slope by a gentle curve to the base, which is rounded off into a thin short line. The calice is shallow and elliptical, with its major and minor axes in the ratio of 10 to 9.

The septa are in six systems, with four complete cycles. They are exsert, granulose on their sides, and project considerably beyond the wall. The primaries are stouter than the rest, which diminish in size according to order. The tertiaries bend towards the secondaries, and usually unite with them near the columella. The quaternaries are generally very short, but each system has one longer than the rest, which bends towards and unites with the adjoining tertiary.

The columella is lamellar, and at its margin lobate. There are pali before the primary septa and also before the junction of the tertiaries with the secondary in each system; they form two indistinctly marked crowns. The calice figured belongs to a young individual, and has only four systems sufficiently well preserved to show the structure of their septa and pali, the other two being partly choked with sediment. The extreme outer ends of a few septa are also broken off. The corallum figured is exteriorly a fine example, but its calice is very much worn.

The costæ, which correspond to the septa, have distinct and deep interspaces, and are ornamented on their free surface by closely packed but prominent granules. They are subequal in size, and diminish gradually from the calice downwards. They vary slightly in length, the higher orders usually joining

the others near the base. In the young example just mentioned the junction of the higher orders with the principal is nearer the calice, and from a third to two-thirds from its margin. The wall is slender, and the costæ, like the septa, extend outwards from it.

The dimensions of the type, which is evidently an adult example, are:—Height of corallum, 9 mm.; length of calice, 10 mm.; breadth of calice, 9 mm. The calice figured is 7 mm. long and 6 mm. broad. Its corallum is well preserved, and is 6.5 mm. high.

Locality, &c.—In Eocene strata at Brown's Creek. Two whole examples, and a portion of a third have only been found.

Trochocyathus planicostatus, *spec. nov.* Pl. i., figs. 3*a*, *b*.

The corallum is longer than broad and pyramidal shaped with a sharply pointed base. The calice is subplane and elliptical, the major and minor axes being in the ratio of 100 to 70.

The septa are exsert and in six systems with three cycles. They are spined on the lateral edges, while lower down there are small granules. All are short, but the primaries are longer than the secondaries, and these again than the tertiaries. The two first orders are stout and subequal, and the tertiaries slender.

The axial space is large, and in the centre there is a fascicular columella having three longitudinally arranged lobes on its surface. Well marked, spined pali are placed in two crowns before the primary and secondary septa, and are connected with these and also with the columella by short, stout, sunken processes.

The costæ in this coral form its most remarkable feature. They are of two kinds; first, 24 prominent, equal, flat, and almost plain costæ, very broad but rounded off at the top, and then regularly diminishing to the pointed base. They reach to the margin of the wall only, and are quite distinct from the septa, the exsert portions of which present the appearance of being inserted in each interspace. The second series of costæ, also 24 in number, are continuations of the three orders of septa, but below the exsert portions of these, that is, from the margin downwards, they are represented on the wall by extremely thin, granular, and sunken lines, which can usually be traced almost to the base. In a young fresh looking specimen in my collection, the contrast between the plain, prominent costæ, terminating at the margin of the wall, and the adjacent spined, exsert septa rising much above it is very striking. The example selected as type is much larger, but, though in good condition, it is not quite as well preserved.

The same young individual has the pali and other features of the calice most clearly marked.

The dimensions of the type are:—Height of corallum, 7 mm.; length of calice, 7 mm.; breadth of calice, 5 mm.

Locality, &c.—Tolerably abundant in the Eocene of the Adelaide bore. Collected by Professor Tate.

T. heterocostatus, T. Woods, from Aldinga, and also occurring in the Adelaide bore, has a similar alternation of broad and slender costæ, the latter of which correspond to the septa, while the former are in the interspaces. In his description of this species, Woods considers that the broad costæ are continued by septa of the fourth and fifth orders, which slightly project into the fossa as a thin edge,* but an examination of several specimens leads me to read the calice differently. One of these specimens enables me also to state that the columella, the structure of which Woods could not determine, is fascicular. *T. heterocostatus* is closely allied to *T. planicostatus*, but differs in shape, as well as in other respects.

Trochocyathus Adelaidensis, *spec. nov.* Pl. i., figs. 4*a*, *b*.

The corallum is free, short, and compressed, especially inferiorly. The base is slightly concave, and equals or even exceeds the calice in length. The lateral edges are doubly curved, being concave just below the calice, and then convex to the basal extremities. The calice is shallow and elliptical with its axes in the ratio of 100 to 76.

The septa are exsert and in six systems with four cycles. The primaries and secondaries are subequal and larger than the tertiaries; the quaternaries are short thin lamellæ. The tertiaries bend towards and join the secondaries; the quaternaries also sometimes unite with the enclosed tertiary. All are beset with pointed granules on their sides.

The central fossa is large and the columella is apparently fascicular. Only three specimens of this coral have been found, and the calices of all are much worn. One of them has been rubbed down to a level surface, which thus represents a transverse section of the calice a little below its summit (pl. I., fig. 4*b*). The details of the calice given in the text have been worked out from an examination of all three examples. The pali are indistinct, but I judge them to be moderately thin structures and placed before the primary and secondary septa.

Exteriorly the corals are better preserved, and the structure of the costæ can be easily read. They correspond to the septa, and consist of rows of small, transversely elongated granules.

* On some Fossil Corals from Aldinga. Phil. Soc., Adelaide, vol. I, 1877, pp. 109, 110, pl. ii., fig. 1.

They are prominent, equal, and extend to the base. Those at the edges follow the outline of the corallum, and are thus doubly curved, while the more central ones become nearly but not quite straight.

The corallum is from 5 mm. to 7mm. in height, and the calice from 5 mm. to 6.5 mm. long by 4 mm to 5 mm. broad. In the largest example the base is 5 mm. longer than the calice.

Locality, &c.—Like the preceding species, from the Adelaide bore. Collected by Professor Tate.

Placotrochus Pueblensis, *spec. nov.* Pl. ii., figs. 1*a*, *b*.

The corallum is moderately tall, curved, and tapers to a rounded and almost pointed base. There is a slight constriction about two-thirds from the summit, below which a faint ridge marks the concave surface of the curve. The calice is almost but not quite circular, and throughout its length transverse sections of the corallum are approximately circular.

The septa are exsert, slender, and in six systems, with four complete cycles. The primaries and secondaries are equal, and the remaining orders become gradually thinner as well as shorter; all are sparingly granular.

The axial fossa is deep centrally, and is traversed longitudinally by a prominent columella, which, instead of being a single lamella, as in Placotrochi generally, is double, with one division rather shorter than the other. This character is certainly not due to fission since the lens shows delicate granules on the inner side of each lamina. Probably the division does not extend very far down, and I should not be surprised to find examples with the columella single. There is also a short, thin, buttress-like process from the longer limb of the columella and in a line with a secondary septum.

Costæ corresponding to the principal septa are visible on the wall as thin, slightly raised ridges. The wall is thin and covered by a delicate shining epitheca ornamented by several inconspicuous transverse folds which, near the calice, form arched crests upon the costæ.

Height of corallum, 17 mm.; the diameters of the scarcely elliptical calice are respectively 10.5 mm. and 10 mm.

Locality, &c.—I collected the unique example of this species on "The Ledge" at Spring Creek in 1899, and though the whole section has been since searched over and over again no other has been seen. Fortunately the specimen is exceptionally well preserved.

P. Pueblensis may be compared with *P. corniculatus*, mihi, from the Adelaide bore, but the latter is compressed inferiorly, and has a more elliptical calice.

Placotrochus inflectus, *spec. nov.* Pl. ii., figs. 2*a*, *b*, *c*.

The corallum is slightly curved, and tapers regularly to a small flatly pointed base. It is compressed, and its lateral edges are ridged by projecting costæ. The wall is moderately stout, and is covered by a strong epitheca having transverse chevron markings. The calice is elliptical with its axes in the ratio of 100 to 87.

There are six systems of septa with four cycles, but the fourth cycle is only developed in the end systems, each of which occupies a larger space in the calice than a central one. The first and second orders are stout and equal, but the third and fourth are very thin lamellæ. The sides of all the septa are sparsely granulated. A prominent lamellar columella projects above the septal ends, to which it is fused inferiorly.

Only four examples of this coral have been collected, and their calices are all more or less worn.

Costæ answering to the first two orders of septa are represented on the wall by broad ridges, which are marked at intervals by the arched crests of the epithecal ornament.

Height of corallum, 16 mm.; length of calice, 7.5 mm.; breadth of calice, 6.5 mm.

Locality, &c.—Rare in the Eocene clays at Brown's Creek, Aire R. district.

Ceratotrochus clinatus, *spec. nov.* Pl. ii., figs. 3*a*, *b*.

The corallum has an arched outline, is free, twice as long as broad, and tapers gently to an abrupt base, which is about two-thirds of the calice in size. A younger and narrower individual has the curve of the corallum continued fully one-third further, and tapers off more rapidly to a rounded point, thus becoming slightly longer than the older form. The latter has not been fractured during fossilization, as the under surface at the base is covered by the epitheca. The calice is subplane and elliptical, its major and minor axes being as 100 to 77.

There are in all 38 septa, and the number on either side of the longitudinal axis is unequal. They are in six systems with four cycles, but the quaternaries are developed in the end systems only, while one of these is incomplete in regard to two septa. For the size of the coral the septa are stout, and the calice is well filled by them. The primaries and secondaries are equal, and the others diminish according to order. All are exsert, more or less curved, and marked by several rows of small granules. The columella is short but broad, lobed at its free surface, and fascicular inferiorly. In the type, which has otherwise an almost perfect calice, only one out of three lobes is intact, but the fractured surfaces of the others

can still be seen. A transverse section of another example shows a large columella, almost solid, and fused with the principal septa.

The wall is stout, and is furnished with a shining epitheca, delicate superiorly, but both thicker and rougher towards the base. Apparently it wears away easily, as only half of the type corallum is now covered by epitheca, and the other two specimens collected have none. The costæ, which correspond to the septa, are equal, closely set, and in the upper half of the corallum faintly visible beneath the epitheca. Where this is wanting they can be traced almost or quite to the base, and near the calice become comparatively prominent.

The dimensions of the type are:—Height of corallum, 9 mm.; length of calice, 4.5 mm.; breadth of calice, 3.5 mm.

Locality, &c.—Rare in the Eocene of Brown's Creek.

Genus Pleuropodia, *nov.*

Corallum simple, cylindrical, ultimately free, with a rounded, costulate base. Gemmation occurs from the wall and probably also from a strobila or nurse-stock. The calice is circular and shallow. Septa moderate in number, subequal, dentate, and granulose. There are prominent pali and a papillary or fascicular columella. Costæ distinct, but interrupted by collarettes of epitheca. Endotheca scanty.

This genus is formed to receive a single species of small corals collected chiefly in the Cape Otway beds. By their calices they are allied to *Cladocora*, but with a single exception, where a lateral bud is attached to the wall, the coralla are free. In one individual (pl. II., fig. 4*c*), a central constriction of the corallum strongly suggests strobilation or growth followed by separation from a strobila or nurse-stock, as observed by various authors in *Fungia*.* Moreover, several of the young subdiscoid forms in the collection resemble the superior half of this corallum, and it is at least probable that they are detached buds from a parent stock. At the same time there are also a few long cylindrical coralla, with a similar costulate base, but not showing signs of division.

Pleuropodia Otwayensis, *spec. nov.* Pl. ii., figs. 4*a*, *b*, *c*, *d*.

The corallum varies in height from almost discoid to tall, the latter forms being sometimes slightly bent. The base is generally tumid, and invariably costulate. The unique example from the Adelaide bore has a minute fragment of rock adhering to part of the base, but the usual costulations are well marked on the free portion.

---

* Bourne terms the parent in *Fungia* a nurse-stock. Q.J. Micro. Sci. vol. XXVII., n.s., p. 294.

The epitheca is in bands, is variable in amount, and covers more or less constricted portions of the corallum. It commonly surrounds the calice, but may be entirely absent in very short, subdiscoid forms. The costæ are equal, granular, and prominent. They correspond to the septa, and except on the inferior part of the corallum are occasionally concealed by the banded epitheca.

The septa are short, dentate, strongly granulose, and vary in number from 24 in young to 32 or 34 in adult examples. They are in six systems with four cycles, but the higher orders are incompletely developed. The lateral bud has only the three first orders of septa present, and its calice presents a more symmetrical appearance than that of the parent, where septa of higher orders are irregularly developed. Similarly the subdiscoid forms have only the principal orders of septa present in their calices.

The pali are large, irregular in shape, and placed as a rule before the primary and secondary septa. The columella, though usually papillary, is fascicular in one or two worn calices. There may be numerous small papilli, or a few larger ones, in which case they resemble the pali. The columella and pali are only partially developed in young calices.

A small amount of endotheca is present in some examples.

The corolla vary from 1.5 mm. to 8.5 mm. in height. Those figured are respectively 8 mm., 6 mm., and 3 mm. high. The calices are all about 3 mm. in diameter, except that of the bud, which is smaller. The base varies in diameter from 3 mm. to 4 mm.

Locality, &c.—Eocene. From the Cape Otway beds, 12 examples; Wilkinson's No. 4, one example. A single specimen also from the Adelaide bore.

EXPLANATION OF PLATES.

Plate I.

Fig.

1. *Trochocyathus Maplestonei*—*a*, corallum, 3 diam.; *b*, calice, 6 diam.
2. *Trochocyathus infracompressus*—*a*, corallum, 3 diam.; *b*, calice of a smaller example, 6 diam.
3. *Trochocyathus planicostatus*—*a*, corallum, 3 diam.; *b*, calice, 6 diam.
4. *Trochocyathus Adelaidensis*—*a*, corallum, 3 diam.; *b*, transverse section of the calice of another specimen, 6 diam.

Plate II.

1. *Placotrochus Pueblensis*—*a*, corallum, 2 diam.; *b*, calice, 4 diam.
2. *Placotrochus inflectus*—*a*, corallum, 2 diam.; *b*, outline of the same, nat. size; *c*, calice (much worn) of another specimen, 4 diam.
3. *Ceratotrochus clinatus*—*a*, corallum, 3 diam.; *b*, calice, 7 diam.
4. *Pleuropodia Otwayensis*—*a*, corallum of short specimen with lateral bud, 4 diam.; *b*, calice of the same, 10 diam.; *c*, corallum showing probable strobilation, 4 diam.; *d*, outline of tall bent corallum, nat. size.

Descriptions of New Species of Xysmatodoma, &c.

By Oswald B. Lower, F.E.S. (Lond.), &c.

[Read September 8, 1903.]

BOMBYCINA.

LYMANTRIADÆ.

Anthela rubicunda, Swin.

(*Darala rubicunda*, Swin., Ann. Mag., N.H., ix., p. 419, June, 1902. *Anthela phœnicias*, Turn., Tr. Royal Soc., S.A., p. 182, July, 1902.)

Roebourne, W.A.; Mackay, Brisbane. Duaringa, Queensland; Palmerston, Northern Territory.

The late Mr. G. Barnard bred this species from larvæ feeding on *Eucalyptus sp.*

NOCTUIDÆ.

AGARISTINÆ.

Idalima placodes, Low.

(*Cruria* (?) *placodes*, Low., Trans. Roy. Soc., p. 30, 1903.)

Idalima hemiphragma, Low.

(*Cruria hemiphragma.*, *ib.*, *l.c.*, 1903.)

I refer both these species to Turner's genus *Idalima*; the latter species has a strong broad conical horny projection from forehead; and the former has a similar, but much more feeble appendage. I would have referred *hemiphragma* to *Coenotoca*, Turn., but it has no abdominal crests, but the frontal projection and neuration are exactly as in that genus, and it is highly probable that when allied forms are discovered this latter genus will have to be merged into the former.

HOMOPTERINÆ.

Grammodes pulcherrima, Luc.

(P.L.S., N.S.W., p. 258, 1892.)

Grammodes minor, Swin.

Grammodes Clementi, Swin., Ann. Mag., N.H., viii., 133, 1901.

Grammodes ocellata, Tepp.

(Nat. Ins., S.A., p. 46, 1890. *Grammodes excellens*, Luc., P.L.S., N.S.W., p. 257, 1892.)

Brisbane, Queensland; Adelaide, S. Australia; Derby, Western Australia; Broken Hill, N.S. Wales.

MOLOPA PLANALIS, Swin.

(Ann. Mag., N.H., ix., p. 421, 1902. *Churia thermodes*, Low., Tr. Roy. Soc., S.A., p. 34, 1903.)

Derby and Roebourne, Western Australia; Tennant's Creek, S. Australia.

Hampson refers this to *Churia*.

HYPENINÆ.

PRIONOPHORA RHODINASTIS, Meyr.

(Tr. Ent. Soc., Lond., p. 44, 1902. *Marapana rhodea*, Turn., Tr. Roy. Soc., S.A., p. 15, 1903.)

Queensland and New Guinea.

GEOMETRINA.

SELIDOSEMIDÆ.

THALAINODES, Low.

In the generic description, it was inadvertently stated that the male possessed a fovea. Such is not the case.

GEOMETRIDÆ.

EUCHLORIS DICHROA, n. sp.

Male and female, 18-22. Head and face orange, fillet snow-white, antennæ white, pectinations ochreous 6. Palpi white. Thorax and abdomen pale yellowish-green, beneath white. Legs white, posterior tibiæ not thickened. Forewings elongate, triangular, termen oblique, 3 and 4 separate, 6 out of 9 near base, 11 free; pale yellowish-green; extreme costal edge snow-white, edged beneath throughout with orange, not so well developed in female; about 6 fine waved whitish transverse lines, reaching margins, first 3 antemedian, others post-median leaving centre of wing with clear ground color; cilia pale yellow, terminal half whitish. Hindwings with termen rounded; 6 and 7 short stalked; color, markings and cilia as in forewings.

Mackay, Queensland; two specimens in November.

LEPTOMERIS ISODESMA, n. sp.

Female, 20 mm. Head and face fuscous, antennæ whitish-ochreous, fillet white. Palpi greyish-fuscous. Thorax whitish-ochreous. Legs whitish ochreous, anterior pair fuscous-tinged, all spurs present. Forewings elongate, triangular; pale whitish ochreous; markings pale fuscous, gently waved throughout; a line from costa at one-fourth to one-fourth

dorsum; another from beyond middle of costa to beyond middle of dorsum, and two others close together and parallel near beyond; a similar line just before termen; a very small fuscous discal dot, between first and second lines; a row of black dots along termen; cilia ochreous-white. Hindwings with termen rounded, color and all markings, except first lines, as in forewings.

Broken Hill, N.S. Wales; two specimens in October.

PYRALIDINA.

PYRAUSTIDÆ.

Pionea leucotypa, n. sp.

Male, 16 mm. Head, palpi, antennæ, and thorax light fuscous, palpi internally and at base white. Legs white, anterior tibiæ and tarsi infuscated, abdomen fuscous, white beneath, with a lateral row of black dots. Forewings elongate, moderately dilated termen gently rounded, oblique; brownish, somewhat fuscous tinged; a very strongly outwardly curved dull whitish streak, from costa at one-sixth to dorsum at one-third, most pronounced on dorsum; a well developed clear white fascia from costa at five-sixths to dorsum before anal angle, curved outwards beneath costa, and finely edged more or less throughout with fuscous; a small fuscous dot in the disc beyond middle, nearer costa than dorsum; a row of obscure blackish praeterminal dots; cilia fuscous-whitish. Hindwings pale greyish, becoming fuscous tinged around termen and apex, and with a few praeterminal dots as in forewings; cilia grey-whitish, basal half fuscous.

A distinct species, well characterised by the white fascia. It is highly probable that the first streak will be better developed in fresher specimens.

Mackay, Queensland; one specimen in October.

Pionea achroa, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, and abdomen dark fuscous, palpi beneath grey-whitish, abdomen beneath ochreous-grey. Legs grey-whitish, suffused with light fuscous above. Forewings elongate triangular, termen obliquely rounded; dark fuscous; lines obscured by general ground color; a small ochreous spot on costa at three-fourths, from which proceeds a faint dark fuscous waved line, somewhat curved outwards on upper half; cilia dark fuscous, darker on basal half. Hindwings dark fuscous; cilia as in forewings.

An obscure species, devoid of any special characteristic.

Brisbane, Queensland; one specimen (? January).

TIRATHABA CHLOROSEMA, n. sp.

Female, 30 mm. Head, palpi, antennæ, and thorax pale flesh color, palpi imperfect. Abdomen ochreous-yellow, fleshy-white beneath. Legs fleshy-white. Forewings elongate, moderate, costa gently arched, termen nearly straight; flesh color, fuscous tinged; a dull, dark greenish mark below costa at one-fourth; a large similar-colored patch, somewhat triangular shaped, in a direct line beyond, and two smaller ones, somewhat confluent still further beyond, but in a direct line with others; an interrupted line along termen and apical fourth of costa; cilia fleshy-ochreous. Hindwings with apex slightly prominent; shining ochreous-yellow, becoming fuscous-tinged around apex, and narrowly along termen; cilia ochreous-grey, darker at base.

This insect agrees fairly well with the characters of *rufivena*, Walk., but the palpi, being damaged, it may not be the correct generic location. It is not unlike that insect, but is quite distinct by the absence of scarlet neural streaks, and apparently shorter palpi.

Mackay, Queensland; one specimen in March.

EPIPASCHIINÆ.

ORTHAGA ATRIBASALIS, Warr.

(Ann. Mag. Nat. Hist. (6), xvi., p. 461. *Stericta leucodesma*, Low., Trans. Roy. Soc., S.A., p. 156, 1896.)

Queensland.

ORTHAGA SEMINIVEA, Warr.

(Ann. Mag. N. Hist. (6), xvi., p. 463. *Stericta chionopa*, Low., Trans. Roy. Soc., p. 155, 1896.)

Queensland.

I had not seen Warren's paper at the time I described the above.

TORTRICINA.

TORTRICIDÆ.

AROTROPHORA COSMOPLACA, n. sp.

Male, 14 mm. Head, palpi, and thorax bright reddish-orange, palpi internally whitish. Antennæ and abdomen fuscous. Legs whitish, faintly fuscous tinged. Forewings elongate, moderate, costa rather strongly arched, termen nearly straight; bright ochreous-orange, becoming mixed with ferruginous-purplish on posterior two-thirds; a large pale golden yellow triangular patch on costa in middle, rather broadly edged anteriorly by a purplish-fuscous suffused fascia, which extends to middle of dorsum, posteriorly narrowly edged by lighter reddish-orange; cilia orange, becoming reddish at

base and fuscous purple around anal angle. Hindwings and cilia pale whitish-grey.

A beautiful species; distinct by the brilliant coloring and yellow triangular costal patch.

Perth, Western Australia; one specimen received from Mr. S. Angel, taken in November.

TINEINA.

ŒCOPHORIDÆ.

Heliocausta episarca, n. sp.

Male, 34 mm. Head and thorax ochreous-reddish. Palpi carmine-pink, internally and at base white. Antennæ ochreous, basal third carmine above, abdomen ochreous-whitish. Legs ochreous-whitish, anterior pair, except coxæ, carmine. Forewings elongate, rather broad, costa rather strongly arched, termen not oblique; 7 to termen, just below apex; dull ochreous-reddish; costal edge bright carmine throughout; a dull purplish-fuscous moderate transverse oblique fascia from just beneath costa at one-third to beyond middle of innermargin, broadest below; a purplish-fuscous discal spot at two-thirds in middle; a very faintly indicated fuscous line from costa at three-fourths, thence curved outwards and ending at anal angle; cilia purplish fuscous. Hindwings pale ochreous, cilia pale ochreous, becoming fuscous tinged on basal half on upper half of termen.

Apparently between *parthenopa* and *euselma*, Meyr., but differs from both in the presence of the fascia. It has the facies of a *Euchætis*, but veins 3 and 4 of hindwings are not separate at origin.

Melbourne, Victoria; one specimen in October.

Heliocausta pericosma, n. sp.

Male, 30 mm. Head, thorax, and abdomen light ochreous. Palpi and antennæ light carmine, palpi internally whitish, antennal ciliations nearly 3. Legs yellow, anterior pair carmine-pink. Forewings elongate, rather broad, costa rather strongly arched, termen nearly straight, 7 to just below apex; light ochreous, strongly tinged with yellow; costal edge bright carmine throughout; a small dull purplish-ferruginous spot on fold in middle; a large, well-defined similar colored spot in middle of wing at two-thirds from base; termen faintly and narrowly suffused throughout with light carmine, which color is more or less continued along innermargin to middle; cilia pale salmon pink. Hindwings light golden-yellow; 3 and 4 from a point, 5 somewhat approximated to 4 at base; cilia yellowish, lighter around apex.

Another species with the facies of a *Euchœtis*, which is probably its true generic location, as in markings it reminds one of *E. iobola*, Meyr.

Kewell, Victoria; one specimen in April.

Type in Coll., *Kershaw*.

Hoplitica rhodopepla, n. sp.

Male, 25 mm. Head, thorax, and palpi light fleshy-red, palpi internally and at base white. Antennæ ochreous, at base fleshy-red. Abdomen dull ochreous, segmental margins whitish. Legs ochreous, anterior pair light fleshy-red, coxæ white. Forewings elongate, moderate, costa moderately arched termen slightly oblique, 7 to apex; light fleshy-red; a small fuscous dot in disc at one-third, a second, hardly traceable, below and beyond, and a third in disc at two-thirds; costal edge deeper than ground color, extreme costal edge whitish from one-third to beyond middle; cilia light fleshy-red. Hindwings whitish-ochreous, with an obscure fuscous suffusion at apex and more or less continued narrowly to middle; cilia whitish-ochreous, becoming fuscous tinged around apical portion.

This is a neatly marked species recalling *pudica*, Meyr., in general appearance, but without the large discal dot of that species. The second spot is practically absent in the specimen before me; probably other specimens may show it.

Dubbo, New South Wales; one specimen in June.

Eulechria atradelpha, n. sp.

Female, 24 mm. Head, palpi, antennæ, and thorax dark fuscous, palpi whitish internally, basal half of second joint whitish, thorax with an obscure transverse whitish median fascia. Legs dark fuscous, posterior pair mixed with ochreous-whitish. Abdomen dark fuscous, with whitish segmental rings, well defined. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; dark fuscous, finely irrorated with somewhat bluish-white scales; base of wing darker fuscous; a moderately broad, straight transverse black fascia, from one-third of costa to one-third dorsum, edged by its own width, with clear white anteriorly, hardly reaching margins; a black transverse fascia from costa at two-thirds to dorsum at anal angle, becoming dilated into an oval ring in middle, centre filled with ground color; some blackish scales towards termen; cilia dark fuscous. Hindwings with veins 3 and 4 from a point; fuscous-purplish, lighter towards base; cilia fuscous, with a darker median line.

Closely allied to *thermistis*, Low., of which it may be the female, as the markings are almost identical in position, and

the general coloring is somewhat similar on the forewings; the hindwings, however, are totally different, being bright orange in that species. I am rather inclined to place this species in *Œnochroa*, but as the thorax and palpi are different, I place it here, not forgetting, however, that the sexual differences in some species of *Œnochroa* are very marked in the hindwings, and possibly when further material is available the generic location will need to be rectified.

Stawell, Victoria; one specimen in November.

Linosticha myriospila, n. sp.

Male, 25 mm. Head, antennæ, and thorax grey, face somewhat whitish, thorax mixed with a few blackish scales. Palpi grey, whitish internally. Abdomen light fuscous. Segments silvery-grey, strongly margined on sides. Legs grey-whitish, tarsi blackish, ringed with white. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 to apex; grey, with minute scattered blackish scales; markings black; a dot on base; a second on fold at one-sixth from base; a third on fold beyond one-third, a fourth above and obliquely before; and two others transversely placed in disc at two-thirds; a praeterminal row of well-defined dots, continued around apex and along costa to just above the two transversely placed dots; indications of a parallel row anterior to praeterminal series; cilia grey. Hindwings pale greyish-fuscous, paler on basal half; cilia greyish-fuscous.

Not very near any other described species; it approaches *Hoplitica myodes*, Meyr., and *Eulechria griseola*, Zell., in general appearance, but the antennæ easily distinguish it; and to *Euchœtis endoleuca*, Meyr., to which it is not unlike, it is easily separated by the termination of vein 7 at apex.

Broken Hill, New South Wales; one specimen beaten from *Eucalyptus* in November.

Linosticha amphileuca, n. sp.

Male, 20 mm. Head, palpi, antennæ, and thorax fuscous-whitish, palpi fuscous externally. Abdomen fuscous, segmental margins whitish. Legs fuscous-whitish, posterior pair paler. Forewings elongate, moderate, costa hardly arched, termen rounded, strongly oblique; white, suffusedly mixed with fuscous; the fuscous tends to accumulate and forms a moderately thick streak from beneath costa at base to three-fourths of costa, leaving extreme costal edge white, and a white streak above fold; a suffused fuscous streak along fold; a fuscous transverse line from costa at three-fourths to inner-margin near anal angle, indented beneath costa; cilia white, mixed with fuscous on basal half. Hindwings pale greyish-

fuscous; cilia white, with some fuscous scales along basal portion.

Not very near any other, perhaps most allied to *pudica*, Low., but very different in form of wing.

Birchip, Victoria; one specimen in April (*D. Goudie*).

Philobota ochrolitha, n. sp.

Male, 14 mm. Head, thorax, and palpi ochreous-white, terminal joint of palpi fuscous externally. Antennæ fuscous, basal fifth ochreous-white. Abdomen fuscous, segmental margins ochreous-white. Legs ochreous-white, posterior pair ochreous, hairs of posterior pair dense, ochreous. Forewings elongate, moderate, costa gently arched, termen rounded, oblique; clear ochreous; extreme costal edge fuscous, from base to one-third; cilia light ochreous-fuscous. Hindwings greyish-fuscous, cilia light ochreous.

Recalls in general appearance specimens of *Clerarcha* (*Xyloryctidæ*).

Duaringa, Queensland (opposite Railway Station); one specimen in November.

Philobota hemicroca, n. sp.

Male, 24 mm. Head and thorax yellowish, thorax suffused with orange. Palpi fuscous, internally yellowish on second joint. Antennæ fuscous, obscurely spotted with white. Abdomen dark fuscous. Legs fuscous, posterior pair dull ochreous-fuscous. Forewings elongate, moderate, costa moderately arched, termen oblique, hardly rounded; pale yellow, somewhat mixed with orange at base, and around margins; an inwardly oblique ferruginous spot on anal angle, hardly reaching half across wing; cilia fuscous. Hindwings and cilia fuscous; cilia paler at base.

Somewhat allied to *Monadelta*, Low., but easily separated by the clear yellow and fuscous cilia of forewings.

Stawell, Victoria; one specimen in October.

Philobota oxysema, n. sp.

Male, 18 mm. Head, palpi, and thorax whitish, palpi externally fuscous. Abdomen whitish. Antennæ whitish, spotted with fuscous. Legs fuscous whitish. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; white, with minute scattered fuscous scales; markings fuscous; extreme costal edge fuscous towards base; a dot in cell at one-third from base; an inwardly oblique transverse narrow fascia from anal angle to two-thirds across wing; a suffused spot on costa at four-fifths; a narrow streak before and parallel to termen nearly touching previous spot; a nar-

row line along termen and apical fourth of costa; cilia whitish with a fuscous median line, becoming darker around apical portion. Hindwings greyish-fuscous, cilia whitish, with a fuscous median line.

Not unlike some species of *Nephogenes*.

Broken Hill, New South Wales; one specimen in January.

Saropla poliochra, n. sp.

Male, 20-25 mm. Head and palpi very dull ochreous-whitish, palpi fuscous externally. Thorax fuscous, patagia ochreous-whitish. Antennæ and abdomen fuscous. Legs fuscous, posterior pair whitish-ochreous, anterior and middle tibiæ and tarsi ringed with whitish. Forewings elongate, moderate, somewhat dilated posteriorly, costa gently arched, termen rounded, strongly oblique; dull greyish-ochreous-whitish, more or less minutely irrorated with blackish scales, which sometimes tend to accumulate along veins; a black dot in disc at one-fourth, a second below and before on fold; a moderately large curved black spot at end of cell; a row of praeterminal black spots, continued to apical fourth of costa; cilia greyish-ochreous. Hindwings greyish-fuscous; cilia grey.

Closely allied to *paracycla*, Low., but differs by longer palpi, different ground color of both forewings and hindwings and absence of ochreous costal edge. *Paracycla* varies, but never to the extent of considering the present species a variety of it.

Stawell, Victoria; two specimens in March.

Cæsyra maculopa, n. sp.

Female, 15 mm. Head, palpi, and thorax white, thorax infuscated, antennæ fuscous, white at base. Abdomen and legs white. Forewings rather short, broad, costa gently arched, termen oblique, faintly sinuate beneath apex; greyish-fuscous, more or less mixed with white; a moderately narrow oblique fuscous transverse fascia, edged posteriorly by its own width of white, from costa before middle to middle of inner-margin, narrowest in middle; a dark fuscous rounded spot-like patch beneath apex, edged anteriorly by a whitish streak, cilia whitish, becoming fuscous towards terminal portion. Hindwings light grey; cilia grey.

Not near any other species of the genus; it may not be its correct generic location, and the male may show additional characters. It agrees, however, in the characters of *Cæsyra*.

Halbury, South Australia; one specimen in November.

Aristeis macrotricha, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, abdomen, and legs dark fuscous, head with some ochreous hairs, palpi internally slightly ochreous tinged, posterior legs yellow. Forewings elongate, moderate, costa moderately arched, termen slightly rounded, oblique, 7 to termen; dark coppery fuscous; a moderately broad oblique transverse ochreous fascia, from costa in middle to innermargin beyond middle, sometimes absent; cilia deep coppery fuscous, terminal half yellowish, except around anal angle. Hindwings yellow; a fuscous apical patch, more or less continued along termen throughout; innermargin rather broadly fuscous; cilia fuscous.

Distinct from the other described species. The occasional absence of the ochreous fascia of forewings is peculiar; the antennal ciliations are as in *hepialelella*, Walk., and are much shorter on terminal third, reminding one of species of *Linosticha* (especially *dichroa*, Low.), but the absence of pecten and different position of vein 7 of forewings are sufficient characters to remove it from that genus.

Stawell, Victoria; two specimens in October. I have one poor sp. taken at Tarrawingee, near Broken Hill.

Ocystola paralia, n. sp.

Male, 14 mm. Head, palpi, and antennæ white, palpi fuscous externally, half of second, antennal ciliations 3½. Thorax grey, patagia white. Abdomen greyish-white. Legs whitish, anterior pair mixed with fuscous, posterior ochreous-tinged. Forewings elongate, moderate, costa gently arched, apex tolerably pointed, termen oblique; white with fuscous markings; extreme costal edge fuscous on basal third; and slightly inwards curved narrow fascia from dorsum before middle to slightly more than half across wing, becoming spot-like at apex, and obscure on dorsum; a spot on dorsum before anal angle; a spot at anal angle and another immediately above and oblique before it, almost touching preceding spot; cilia whitish ochreous, strongly mixed with fuscous on median third. Hindwings with veins 3 and 4 from a point; shining whitish; cilia pale whitish-ochreous.

Very near *trilicella*, Meyr., but differs by the palpi, grey, not fuscous, thorax and antennal ciliations being shorter.

Melbourne (Domain), Victoria; one specimen in October.

Acompsia mesozona, n. sp.

Female, 20 mm. Head and palpi whitish yellow. Thorax purplish-fuscous, posterior half whitish-yellow, antennæ fuscous. Abdomen fuscous, beneath ochreous, anal tuft yel-

lowish. Legs ochreous, anterior pair fuscous. Forewings elongate, moderate, costa gently arched, termen rounded, very oblique; 7 to costa, just above apex, 2 from well before angle of cell, 3 from angle; whitish yellow, with dull purplish-fuscous markings; a very narrow basal streak, hardly reaching innermargin; a moderate, straight, transverse fascia, from middle of costa to middle of innermargin, slightly dilated on costa; a moderately large apical patch, anterior edge somewhat darker fuscous, from costa at three-fourths to innermargin at anal angle, moderately projecting in middle; cilia ochreous, mixed with fuscous, becoming wholly fuscous around anal angle. Hindwings with veins 3 and 4 from a point; fuscous, somewhat bronzy-tinged; cilia yellow.

Not approaching any other described species; in general appearance recalling a *Philobota*.

Stawell, Victoria; one specimen in October.

Borkhausenia callioptis, n. sp.

Female, 16 mm. Head, palpi, antennæ, thorax, abdomen, and legs ashy-grey-fuscous, palpi spotted with white, antennæ with rather strong pecten, posterior legs ochreous, anterior and middle tarsi ringed with whitish. Forewings elongate, moderate, costa gently arched, termen obliquely rounded, 7 to costa, 2 and 3 separate; ashy-grey-fuscous, becoming grey-whitish on margins; a very obscure fuscous spot in middle of wing at one-third from base; a second in disc at two-thirds; and a third on fold below and between; cilia ashy-grey-whitish. Hindwings yellow; cilia yellow, mixed with fuscous, especially around apex.

Very like *Œnochroa endochlora*, Meyr., but the termination of vein 7 on costa is a reliable point of distinction.

Birchip, Victoria; one specimen taken in April, received from Mr. D. Goudie.

Guestia (?) ischnota, n. sp.

Male, 14 mm. Head, palpi, antennæ, thorax, legs, and abdomen greyish-fuscous, posterior legs grey-whitish. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 2 and 3 stalked, not connected with 3; 7 and 8 stalked, 7 to costa; greyish-fuscous, finely irrorated, with fuscous scales; a small fuscous dot above fold at one-third, a second just below and a third in disc at two-thirds; cilia greyish-fuscous. Hindwings grey-whitish; cilia grey, with a faint fuscous-median line.

An obscure species; doubtfully referable to *Guestia*, the pecten of antennæ appears to be absent, but may be developed in fresher specimens.

Broken Hill, New South Wales; one specimen in September.

Guestia amydrosema, n. sp.

Male, 22 mm. Head, palpi, antennæ, and thorax greyish-ochreous, second joint of palpi whitish-ochreous at apex. Abdomen grey. Legs fuscous, more or less banded with whitish, posterior pair grey. Forewings elongate, moderate, costa gently arched, termen rounded, oblique; greyish-ochreous, very minutely irrorated with fuscous; markings dark fuscous; a narrow transverse basal mark; a spot on fold just before one-third, a second obliquely above, and a third, more conspicuous in disc at two-thirds; a row of praeterminal spots, continued along apical fourth of costa; cilia greyish-fuscous, darker at base. Hindwings pale grey-whitish; cilia grey-whitish.

Reminds one of *Acompsia pseudoprettella*, Stt., but veins 2 and 3 of forewings are not stalked in that species.

Mount Wellington, Tasmania; one specimen in October.

Psecadia hemadelpha, n. sp.

Female, 18 mm. Head, thorax, and patagia snow-white, face fuscous tinged, thorax with two small black dots behind collar, a narrow black transverse median bar and another black bar at posterior extremity. Palpi white, second joint black at base and apex. Antennæ blackish. Abdomen greyish-ochreous, second segment blackish with narrow white segmental rings, two posterior segments black, anal tuft white, abdomen wholly blackish beneath, becoming whitish in middle throughout. Legs whitish irregularly banded with black. Forewings elongate, moderate, costa gently arched, termen hardly rounded, oblique; 7 to just above apex; snow-white, with black markings; a short dentate edged transverse fascia near base, reaching to fold; a similar fascia from costa at one-fourth reaching three-fourths across wing, nearly straight; a spot on dorsum just anterior to this, and another above dorsum between second and third fascia; a third fascia, irregular and outwardly oblique from costa at about middle, where it is followed by a spot, to fold, interrupted below costa; a fourth fascia, similar to third, from costa at five-sixths to just above anal angle, with an elongate tooth below costa; a moderate spot before middle of termen; a more or less complete row of spots along termen and apical fourth of costa; cilia white, chequered with black. Hindwings shining snow-white, with a fuscous, apical patch; cilia white, around apex fuscous.

Differs from *postica*, Zell., by its smaller size, different arrangement of markings and abdomen.

Arltunga, Central South Australia; one specimen in November.

PSECADIA SCIAPTERA, n. sp.

Male, 22 mm. Head, face, and thorax white, collar black. Palpi blackish, internally whitish. Abdomen fuscous. Legs black, banded with white. Forewings elongate, moderate, costa gently arched, termen oblique, 7 to apex; snow-white, with black markings; a spot on costa near base; an outward curved series of three dots, from costa at one-fifth to dorsum at one-fifth; a short oblique mark on costa before middle, generally connected with spot at its extremity; a spot above dorsum before middle; a larger spot in disc at two-thirds; a somewhat triangular spot on costa at five-sixths, containing a spot of ground color in middle; a rather broad band along termen, with several spots of ground color on lower half, and with a curved tooth in middle, the extremity of which nearly touches the triangular costal spot; 2 or 3 black spots on apical fifth of costa; cilia white, basal half black. Hindwings white, apical two-fifths dark fuscous, darkest along termen; cilia as in forewings.

Differs from the other described species by the band along termen, besides other details.

Mackay, Queensland; one specimen in October.

EUDRYMOPSIS, n. g.

Head and thorax smooth. Antennæ in male (?), with small pecten. Palpi moderate, recurved, second joint tolerably smooth, not reaching base of antennæ, terminal joint shorter than second, acute. Forewings elongate; 2 and 3 stalked from angle; 7 and 8 stalked, 7 to apex or just below it. Hindwings with 3 and 4 connate; 5, 6, and 7 parallel, 8 free.

In the neighborhood of *Guestia*, but differs in neuration. I really think it should be placed next to the *Gelechiadæ*, as it recalls sp. of that group, but vein 8 of hindwing is free.

Type *E. xyloscopa*, Low.

EUDRYMOPSIS XYLOSCOPA, n. sp.

Female, 40 mm. Head, dull ochreous. Antennæ, palpi, thorax, abdomen, and legs ochreous fuscous, posterior legs yellowish, all tarsi banded with ochreous-whitish, first segment of abdomen clothed with long ochreous hairs. Forewings elongate, moderate, costa evenly arched, termen oblique; fuscous, mixed with dull ochreous, the former color forms a more or less darker patch above to rims; cilia fuscous, paler

at base. Hindwings fuscous; hairs along dorsum, long, yellowish; cilia fuscous.

Broken Hill, N.S. Wales; one specimen on bark of *Eucalyptus* sp. in October.

XYLORYCTIDÆ.

Xylorycta philonympha, n. sp.

Male and female, 30-36 mm. Head and face ochreous-orange. Thorax ochreous, posteriorly shining white, posterior two-thirds of patagia shining white. Palpi white, somewhat infuscated externally. Antennæ ochreous, ciliations of male 2. Legs whitish-ochreous, coxæ orange internally, fuscous externally, tibiæ more or less infuscated externally. Abdomen shining white, segments dull orange. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 to termen; shining snow-white; a narrow orange streak along edge of costa from base to just before apex, becoming fuscous-tinged on basal one-fourth; cilia shining snow-white. Hindwings with 3 and 4 from a point; 6 and 7 from a point; pale fuscous, becoming lighter towards base; cilia white, becoming pale ochreous at base and on costal portion.

Differs from *homoleuca*, Low. (which I have received from Derby, W.A., Townsville, Queensland, and Tasmania) by the orange streak along costa and orange head, and from *chionoptera*, Low., especially by the underside of abdomen and other points.

Broken Hill, New South Wales; two specimens in September and October.

Telecrates streptogramma, n. sp.

Male, 20 mm. Head, palpi, and thorax ochreous-orange, palpi externally fuscous, except basal two-thirds of second joint, thorax with a broad fuscous anterior band, patagia orange, fuscous anteriorly. Antennæ fuscous, ciliations nearly one-half. Abdomen fuscous-leaden, segmental margins yellowish, lateral margins yellowish. Legs ochreous-fuscous, posterior pair ochreous-yellow. Forewings elongate, moderate, costa gently arched, termen oblique, faintly sinuate beneath apex; 7 to termen; shining pale yellow, with blackish markings; costal edge narrowly blackish throughout; indistinct towards apex; a moderately broad subcostal streak from base to apex, emitting from its upper extremity at two-thirds fine lines along veins to termination; an inwardly oblique somewhat triangular spot on dorsum at anal angle; all veins between this and termen outlined with blackish; a fine line

along termen; cilia ochreous-yellow, basal half fuscous. Hindwings with veins 6 and 7 stalked dark fuscous, becoming much paler on basal one-half; cilia ochreous-yellow, becoming paler towards base, and with a faint fuscous basal line towards anal angle.

A distinct and pretty species, recalling species of *Philobota* (*Œcophoridæ*).

Gisborne, Victoria; one specimen (probably dislodged from *Casuarina*) in December. (*Coll.*, *Lyell.*)

Agriophara tephroptera, n. sp.

Male, 28 mm. Head and thorax cinereous-grey, face white. Palpi and antennæ cinereous-grey. Abdomen ochreous-whitish. Legs whitish, anterior coxæ snow-white, anterior and middle tibiæ and tarsi dark fuscous above, tarsi banded with whitish, posterior tarsi with a few blackish bands above. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; cinereous-grey; extreme costal edge white from one-third to apex; more pronounced beneath; 4 rather oblique outwards curved series of transverse fuscous marks; first from one-fourth costa to one-fourth dorsum; second from costa at about one-third to about middle of dorsum; third from costa at three-fifths to anal angle; fourth more strongly curved and better developed, from costa at three-fourths to anal angle and there meeting third; an interrupted blackish line along termen. Hindwings pale ochreous-whitish; somewhat fuscous tinged; cilia ochreous-whitish, with fuscous subbasal and subterminal lines.

Differs from the other described species by the pale ochreous hindwings.

Broken Hill, New South Wales; one specimen in December (at light).

ELACHISTIDÆ.

Opszyga, n. g.

Head smooth. Antennæ in male thickened, about four-fifths. Labial palpi very long, recurved, second joint somewhat roughened, terminal joint longer, acute. Posterior tibiæ rough haired. Forewings elongate, pointed; vein 1 furcate at base; 7 and 8 stalked, rarely 6 out of 7 near base. Hindwings two-thirds; cilia $2\frac{1}{2}$; 6 and 7 stalked.

Type, *O. eugramma*, Low.

I form this genus to receive *eugramma* described by me (P.L.S., N.S.W., 114, 1899) as a *Limnœcia*, but having obtained further material I feel justified in erecting this genus. It differs from *Limnœcia*, Stt., by the stalking of veins 6 and

7 of hindwings and antennæ. Vein 6 of forewings runs out of 7; this is probably an accidental deformity; but the neuration of hindwings is constant throughout.

Limnœcia xanthopelta, n. sp.

Male, 22 mm. Head and palpi orange-yellow, terminal joint of palpi blackish. Thorax and antennæ black, patagia orange-yellow. Antennal ciliations nearly 2. Abdomen orange-yellow, anterior segments blackish. Legs blackish, posterior pair orange yellow. Forewings elongate-lanceolate, moderately broad; orange-yellow, with black markings; a broad oblique fascia from costa before to dorsum at one-third; a similar fascia, somewhat broader from costa at three-fourths to anal angle, connected in middle with previous fascia by a somewhat triangular fascia, dilated anteriorly, and confluent below middle with preceding fascia; a moderate fascia along termen, narrowed on lower half; cilia blackish, with a yellowish tooth near anal angle. Hindwings elongate-lanceolate; dark fuscous; an ochreous-yellow apical spot; extreme apex fuscous; cilia orange-yellow, becoming fuscous along apical portion; costal cilia orange-yellow.

Very like species of *Macrobathra* (*Œcophoridæ*).

Broken Hill, New South Wales; one specimen in November. Mr. D. Goudie has sent me several specimens taken at Birchip, Victoria.

TINEIDÆ.

Ctenocampa baliodes, Meyr.

I have a female of this species taken near Melbourne, which only differs from the male as follows:—

Size 24 mm. Antennæ filiform; underside of both wings spotted throughout with white, well defined; in the male the forewings are somewhat spotted below, but the hindwings are black above and below; the abdomen beneath is marked with narrow white segmental rings, which, although developed in the male, are more obscure. An abnormality occurs in the hindwing of the female by having vein 4 present, stalked with 5; the other wing is normal.

I have seen a male specimen from Hobart, Tasmania.

Narycia (Xysmatodoma) epichrysa, n. sp.

Male, 24 mm. Head yellow, face fuscous. Palpi and antennæ fuscous, palpi internally dull ochreous, antennal ciliations 1. Thorax fuscous, with a whitish median spot. Abdomen fuscous, ochreous beneath. Legs ochreous, tarsi somewhat banded with fuscous. Forewings elongate, moderate, costa gently arched, termen rather strongly oblique; 7 absent;

white, more or less spotted with fuscous, arranged in oblique transverse series; markings fuscous; costa and innermargin strigulated throughout; an outwardly oblique narrow fascia, from one-third costa reaching half across wing; an irregular rather flattened quadrate spot on middle of costa, and another similar, but smaller between this and apex, interspaces slightly ochreous-tinged on costa; a row of small spots along termen; a parallel series of spots, starting from last costal spot and terminating on innermargin at two-thirds; cilia ochreous-grey, tips darker. Hindwings fuscous; cilia as in forewings, but with a dull fuscous basal line.

Apparently nearest *protorna*, Meyr., but differs especially by the yellow head and different shape of forewings.

Melbourne, Victoria; one specimen in October.

NARYCIA (XYSMATODOMA) SEMIOTA, n. sp.

Male, 16 mm. Head, palpi, antennæ, thorax, legs, and abdomen dark fuscous, antennal ciliations 2, posterior legs ochreous fuscous, anal tuft yellowish. Forewings elongate moderate, costa gently arched, termen obliquely rounded; 7 and 8 long stalked, 7 to below apex; dark fuscous, finely reticulated throughout with blackish, the absence of which causes a moderately broad short inwardly oblique, obscure, fascia, from innermargin before middle to two-thirds across wing; costa with three or four obscure ochreous dots along posterior half; cilia greyish fuscous, basal half dark fuscous, mixed with blackish. Hindwings fuscous, rather thinly scaled; cilia fuscous, darker at base.

Nearest *lasiocola*, Meyr., differs in more sombre coloring.

Melbourne, Victoria; one specimen in May.

NARYCIA (XYSMATODOMA) HYALISTIS, n. sp.

Male, 20 mm. Head, thorax, antennæ and legs fuscous, antennal ciliations 1, posterior legs greyish. Abdomen greyish. Forewings elongate, moderately dilated posteriorly, costa gently arched, termen obliquely rounded; 7 and 8 stalked, 7 to termen; very pale grey-whitish, irregularly strigulated throughout with fuscous, thickest on margins; a faint fuscous spot above middle at two-thirds; cilia greyish fuscous. Hindwings with 4 and 5 short stalked; very pale grey, thinly scaled, almost transparent; cilia greyish.

An obscure species, devoid of any special characteristic, excepting perhaps the dilated forewings and rather clear hindwings.

Gisborne, Victoria; one specimen. (*Coll. Lyell.*)

Narycia (Xysmatodoma) campylota, n. g.

Male and female, 16-20 mm. Head, palpi, thorax, antennæ, abdomen and legs fuscous, antennal ciliations 1, posterior tibiæ and tarsi somewhat ochreous, tarsi with fuscous rings. Forewings elongate, moderately dilated posteriorly, termen obliquely rounded; 7 and 8 stalked, 7 to termen; light fuscous, more or less finely reticulated with darker fuscous; an obscure broad whitish-grey oblique transverse fascia, anterior edge from beyond one-fifth costa to one-third innermargin, posterior edge, rather suffused, from costa before middle to innermargin in middle; an obscure whitish prœterminal fascia, from below vein 7 to before anal angle; 3 or 4 fuscous, irregular quadrate spots on costa beyond middle, separate by very obscure greyish spots; cilia grey, fuscous tinged at base. Hindwings pale grey, thinly scaled; cilia as in forewings.

Somewhat similar in shape of wing to the previous species; the transverse fascia, though obscure, is noticeable and constant in the three species before me.

Flemington (male) in September, Wandins (female), Victoria; in May. (*Coll. Lyell.*)

Narycia (Xysmatodoma) callista, n. sp.

Male, 16 mm. Head yellow. Face fuscous. Thorax, palpi, antennæ, abdomen, and legs dark fuscous, antennal ciliations over 1, tibiæ and tarsi ringed with ochreous. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 absent; pale yellow, markings deep purplish-fuscous; a moderately thick streak along costa from base to one-fourth, at base extended to inner margin; three moderately straight direct fasciæ; first from extremity of costal streak to innermargin at one-fourth, enclosing a quadrate spot of ground color between this and basal streak; second from middle of costa to middle of innermargin, slightly dilated on upper half and angulated outwards on posterior edge below costa, where it is inclined to be connected with third fascia; third from costa at four-fifths to anal angle; a minute spot on costa between first and second fasciæ; a small irregular spot at apex, touching posterior edge of third fascia below costa; cilia dark fuscous. Hindwings light fuscous, bronzy-tinged; cilia fuscous.

In the neighborhood of *Carlotta* and *chrysopetala*, Meyr., but not very near either; the markings are placed somewhat as in *characota*, Meyr.

Gisborne, Victoria; two specimens in November. (*Coll. Lyell.*)

Narycia (Xysmatodoma) lasiomicra, n. sp.

Male, 8-10 mm. Head snow-white. Thorax fuscous, with a white posterior spot. Palpi and antennæ fuscous. Legs greyish-white. Abdomen whitish. Forewings with costa rather strongly arched, termen very obliquely rounded; 8 and 9 stalked, 8 to just above apex; white, minutely spotted throughout with golden-fuscous, and with dull golden fuscous markings; a moderate streak along costa from base to one-fourth, attenuated posteriorly; a rather thick outwardly oblique streak from one-third innermargin to two-thirds across wing; a slightly narrower transverse fascia from before three-fourths of costa to innermargin before anal angle, angulated outwards below middle, and sometimes interrupted just below; cilia white, with elongate streaks of fuscous. Hindwings with 3 and 4 approximated at base; 6 and 7 from a point, sometimes stalked; grey-whitish; cilia white, with a fuscous basal line.

A small though distinct and easily recognised species, the white head being very conspicuous.

Derby, Western Australia; two specimens in April. Mr. Lyell has it from Townsville, taken in October, presumably sent by Mr. F. P. Dodd.

Narycia (Xysmatodoma) euscia, n. sp.

Female, 16 mm. Head, palpi, thorax, antennæ, and abdomen dark fuscous, anal tuft ochreous. Legs fuscous, posterior greyish-ochreous. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 and 8 stalked, 7 to termen; pale ochreous, with fuscous markings; a moderately broad basal patch, outer edge oblique, from costa at one-fourth to before one-third innermargin; a moderately broad oblique fascia, from costa before middle to innermargin in middle, broadest below; a triangular patch on costa at about three-fourths, containing a spot of ground color on costa, somewhat connected with posterior edge of median fascia below middle; a transverse prœterminal fascia, somewhat curved inwards; a fine line along termen; cilia fuscous. Hindwings with 4 and 5 from a point; greyish-fuscous; cilia fuscous.

Gisborne, Victoria; one specimen in May. (*Coll. Lyell.*)

Lepidoscia eurystola, n. sp.

Male, 14 mm. Head, palpi, antennæ, thorax, legs and abdomen dark fuscous. Forewings elongate, moderate, costa gently arched, termen obliquely rounded; 7 absent; fuscous, with obscure whitish markings; an inwardly oblique fascia, from costa at two-thirds to fold at one-fourth from base, upper por-

tion tolerably defined, lower suffused; a small patch on anal angle; a fuscous spot somewhat above apex of this; a thick fascia along termen, hardly reaching anal angle; cilia fuscous, darker at base. Hindwings with 4 absent; pale fuscous, thinly scaled; cilia greyish-fuscous, darker on basal half.

Melbourne (near Flemington); one specimen, in June.

Lepidoscia placoxantha, n. sp.

Male, 20 mm. Head yellow. Palpi, antennæ, thorax, legs, and abdomen deep fuscous-purple. Forewings elongate, moderate, costa gently arched, termen rounded, rather strongly oblique; 7 absent; deep purplish fuscous; a broad yellowish somewhat triangular fascia, from innermargin before middle to before middle of costa, broadest on innermargin; a faintly outlined yellowish patch in middle of wing at four-fifths from base; cilia ochreous-fuscous, basal half deep purplish fuscous. Hindwings fuscous; cilia fuscous.

Not very near any other described species, it bears some resemblance to species of *Chrysoryctis*.

Gisborne, Victoria; one specimen, in September. (*Coll. Lyell.*)

Lepidoscia polychrysa, n. sp.

Male, 10 mm. Head, palpi, antennæ, thorax, legs, and abdomen dark fuscous, posterior legs ochreous. Forewings elongate, moderate, costa arched, termen rounded, oblique; 7 and 8 stalked, 7 to termen; fuscous, irregularly irrorated with golden-ochreous scales; a large irregular-quadrate patch of dull golden metallic close to base, nearly reaching costa, broadest below; a small similarly colored patch on costa in middle, a second on costa at two-third, and a smaller one just beyond; a row of dull golden-metallic oval spots along termen; cilia fuscous, mixed with golden ochreous. Hindwings with termen rounded; pale ochreous, with golden reflections; cilia fuscous.

Nearest *chloropetala*, Meyr., but distinct by hindwings.

Wandin, Victoria; one specimen in May. (*Coll. Lyell.*)

Lepidoscia trileuca, n. sp.

Male, 16 mm. Head ochreous. Palpi, antennæ, thorax, legs, and abdomen fuscous. Forewings elongate, moderate, costa gently arched, termen obliquely rounded, 7 absent; pale whitish, with dull fuscous markings; a moderate basal patch, outer edge from one-fourth costa to one-fourth innermargin indented above innermargin; a broad transverse fascia, from middle of costa to middle of innermargin, sometimes indented beneath costa on posterior edge, and with a fine whitish line

in middle on lower half, a similar fascia before termen, sometimes interrupted on lower half; an irregular line along termen; cilia fuscous. Hindwings fuscous, cilia greyish-fuscous.

Gisborne, Victoria; two specimens in October. (*Coll. Lyell.*)

NARYCIA (XYSMATODOMA) PHOTIDIAS, n. sp.

Male, 16 mm. Head dull ochreous. Palpi, thorax, and abdomen dull coppery-fuscous. Antennæ fuscous. Legs ochreous, suffusedly banded with fuscous. Forewings elongate, moderate, costa gently arched, termen strongly oblique; ochreous, somewhat shining, fine strigulated with pale fuscous; costa obscurely spotted on posterior half; fuscous dot in disc at one-third, a second beyond end of cell, sometimes a clearer ochreous space on costa above; a similar inwardly oblique space on innermargin at two-fifths; a suffused row of fuscous spots along termen; cilia shining ochreous, mixed with fuscous. Hindwings light fuscous; cilia fuscous.

Gisborne, Victoria; two specimens in June. (*Coll. Lyell.*)

NARYCIA (XYSMATODOMA) EPITRICHA, n. sp.

Male and female, 13 mm. Head ochreous yellow. Palpi, antennæ, thorax, abdomen, and legs blackish, thorax faintly purplish tinged, abdomen of female strongly dilated and densely haired on posterior segments, anal tuft black. Forewings elongate, moderate, costa gently arched, termen oblique, hardly rounded; 7 and 8 stalked; deep purple blackish, with ochreous markings; a moderate oblique fascia from costa before one-third to innermargin at one-third; an irregular triangular spot on costa at two-thirds; an erect spot on innermargin before anal angle, nearly touching previous spot; a narrow fascia along termen, narrowest below, hardly reaching innermargin; in male all markings are obscured except first fascia; cilia dark fuscous. Hindwings and cilia dark fuscous.

Nearest *glabrella*, Walk., in size and position of markings.

Melbourne, Victoria; two specimens in March.

NARYCIA (XYSMATODOMA) GASTROMELA, n. sp.

Male, 24 mm. Head whitish. Palpi, antennæ, thorax, and legs dark fuscous, posterior legs mixed with whitish. Abdomen fuscous, strongly mixed with black, especially beneath, anal tuft grey. Forewings elongate, moderate, costa rather strongly arched, termen obliquely rounded; 7 and 8 long stalked, 7 to apex; dull whitish-fuscous, finely irrorated throughout with blackish; dots more or less arranged in transverse fuscous fascia, from one-third of costa to middle of dorsum, very obscure on lower half, edged anteriorly by a rather

broad suffused whitish fascia; cilia greyish-fuscous. Hindwings greyish-fuscous; 6 and 7 closely approximated at base; cilia greyish-fuscous, becoming darker fuscous on basal half.

Somewhat allied to *adelopis*, Meyr., but very distinct by the neuration. The wings are shaped as in *euryptera*, Meyr.

Bathurst, New South Wales; one specimen, in April.

Narycia (Xysmatodoma) trizona, n. sp.

Male, 22 mm. Head yellowish-ochreous, palpi ochreous, basal half of second joint fuscous. Thorax and antennæ fuscous, ciliations nearly 2. Legs fuscous, tibiæ and tarsi irregularly banded with ochreous. Abdomen greyish-fuscous. Forewings elongate, moderate, costa rather strongly arched, apex obtuse, termen somewhat obliquely rounded; 7 absent; white, with blackish markings; costal edge faintly yellowish throughout, more pronounced beneath; a broad oblique basal fascia, outer edge irregularly waved; a broad oblique fascia from costa at one-third to before middle of innermargin; a similar fascia from three-fourths of costa to above anal angle, obscure on lower half; an irregular patch at apex; rest of wing more or less finely spotted; cilia fuscous (imperfect). Hindwings and cilia dark fuscous.

Stawell, Victoria; one specimen, in March.

Lepidoscia barysema, n. sp.

Female, 26 mm. Head, palpi, antennæ, thorax, and legs dark fuscous. Forewings elongate, moderate, costa gently arched, apex round-pointed, termen rather strongly oblique; 7 and 8 stalked, 7 to termen; grey-whitish, irregularly and transversely strigulated with rather thick blackish streaks, more or less interrupted into spots, these spots coalesce on dorsum at one-fourth to form a somewhat quadrate spot; two transverse fascia before and beyond middle, and a narrow fascia from four-fifths costa to anal angle; cilia greyish-fuscous. Hindwings light fuscous; 4 absent; cilia as in forewings.

Recalls *Xysmatodoma saxosa*, Meyr., in general appearance, but the absence of vein 4 of hindwings clearly refer it to *Lepidoscia*.

Stawell, Victoria; one specimen in March.

Eusynopa, n. g.

Head rough, palpi porrected, hardly curved, second joint moderate, thickest at apex, terminal joint acute. Antennæ in male four-fifths, thickened. Posterior tibiæ rough haired. Forewings with vein 2 from just before angle of cell; 3 and 4 stalked from angle; 7 and 8 separate, 7 to costa, 9 and 10 stalked; 11 from a point with 10. Hindwings with all veins separate.

Type, *E. chrysogramma*, Low.

Allied to *Scardia*, Tr., but differs from it and the allied genera by the neuration. The genus is formed to receive *chrysogramma*, Low., formerly placed by me in *Scardia*.

Scardia xanthobapta, n. sp.

Male, 12 mm. Head, palpi, and thorax orange-yellow. Antennæ ochreous. Abdomen and legs greyish-ochreous. Forewings elongate, moderate, costa moderately arched, termen strongly oblique; 4 present; yellowish-orange; costa narrowly dark fuscous from base to two-thirds, posterior termination abrupt, edged below at extremity with orange; a narrow waved, curved, silvery-white line from dorsum before anal angle to termen above anal angle, finely edged internally with fuscous, and enclosing a patch of deeper orange; cilia orange, becoming silvery-white at extremity of streak. Hindwings and cilia grey.

Nearest *pyrochroa*, Meyr., but differs in presence of vein 4 of forewings and other details.

Cooktown, Queensland; one specimen, in December.

Chrysoryctis heminephela, n. sp.

Female, 16 mm. Head and palpi yellow. Thorax and abdomen dark purplish-fuscous. Antennæ fuscous. Legs purplish-fuscous, posterior pair ochreous. Forewings elongate, moderate, costa gently arched, termen very oblique; pale shining yellow; a narrow purplish streak along costa from base to beyond middle, attenuated posteriorly; a fuscous-purplish spot above anal angle; cilia purplish-fuscous. Hindwings light shining purplish; cilia fuscous, at base ochreous.

Between *talantias*, Meyr., and *ochranthes*, Meyr., differing from both by the anal spot and costal streak not being connected with base.

Broken Hill, New South Wales; one specimen, in November.

Chrysoryctis hemisema, n. sp.

Female, 12 mm. Head and palpi yellow-ochreous. Antennæ thorax, legs, and abdomen dark purplish-fuscous. Forewings elongate, slightly dilated posteriorly, costa gently arched, termen very oblique; shining ochreous-yellow; a short flattened purplish fuscous streak along costa from base to beyond middle, suddenly attenuated on posterior two-thirds, not near reaching innermargin at base; a moderately broad purplish-fuscous band along termen anterior edge, oblique from costa at four-fifths to dorsum at about two-thirds; cilia purplish-fuscous. Hindwings bronzy-ochreous, shining; cilia light bronzy-ochreous.

Allied to *purella*, Walk., but differs especially by the basal mark not reaching dorsum.

Melbourne, Victoria; one specimen, in October.

IPHIERGA POLYZONA, n. sp.

Male, 20 mm. Head and palpi ochreous, palpi tufted. Thorax and abdomen dark fuscous, patagia fuscous. Legs fuscous, posterior pair ochreous. Forewings elongate, moderate, costa gently arched, termen rounded; 4 absent; ochreous with black markings; a narrow basal fascia, four moderate straight transverse fasciæ; first from one-fourth costa to one-fourth dorsum; second from two-thirds costa to two-thirds dorsum; third from just before middle of costa to just before middle of dorsum; fourth parallel to termen, cilia ochreous. Hindwings fuscous; cilia ochreous.

Allied to *melichrysa*, Low., but the extra fascia separates it at once. It also has considerable resemblance to *euphragma*, Meyr., but vein 4 is present in that species.

Stawell, Victoria; one (poor) specimen, in October.

On Eucalyptus Odorata, Behr.

By J. H. Maiden, Government Botanist of N.S.W., and Director of the Botanic Gardens, Sydney.

[Read October 27, 1903.]

This is an interesting species, described from South Australian specimens collected in 1848, and until a year or two ago believed to be endemic to that State.* Since then it has been traced into Victoria and extensively in New South Wales. It is believed to occur in Queensland, and may yet be found in Western Australia. South Australian specimens, described in some cases from imperfect material, give rise to a perplexing number of synonyms which I will set forth. Following is the original description of the species:—

"178. *Eucalyptus odorata*, Behr. Rami elongati ut reliquæ partes glabri, juniores angulati (angulis 2 e basi petiolorum orientibus, altero superiore magis prominente), adulti teretes, cortice e viridi fuscescente. Umbellæ breviter pedunculatæ ex axillis foliorum dejectorum rariusve persistentium anni præteriti prorumpunt, pedunculo ¼-½ poll. longo, flores 6-15 brevissime pedicellatos ferente, pedicellis lineam circiter longis crassis angulatis, sensim in calycis tubum, circ. 2 lin. longum, apice cylindricum, ex toto obconicum abiens, calyptra vix 1½ lin., alta, conica obtusiuscula. Stamina pluriserialia filamentis primum crispulis, dein 1½ lin. longis. Stylus cum stigmate terminali planiusculo nunc calycis margine brevior, nunc ex eo magis minusve emergens. Folia oblonga (cum petiolo 3-4½ poll. longa), leviter inæquilatera vix unquam curvata, basi in petiolum attenuata, apice obtusa et tunc interdum mucronata v. acutiuscula vel in acumen breve producta, glauca concolora, crebre pellucide punctulata, margine leviter incrassato pallidiore, rete vasculoso utrinque (in siccis) prominente, venis primariis nervum juxta marginem procurrentem formantibus, spatio marginem inter et nervum venuloso. Sæpius folia irre-

* Since the above was written I have observed the following:—"*E. odorata*, from imperfect specimens forwarded to me, appears to exist on the Lachlan (N.S.W.)." "A Contribution to the Flora of Australia," W. Woolls, p. 244 (1867).

gulariter lobata apparent, lobulo uno alterove obtusissimo in latere vel apicem versus occurrente.

"Mässiger Baum, an trocknen Stellen un auf leichtem Boden ziemlich allgemein verbreitet. Schwitzt ein Gummi aus, welches wie Gummi Kino gebraucht werden könnte. Seine Blätter strotzen von ätherischem Oele und hauchen einen Geruch aus wenn es regnen will. Der Stamm ist rauh, da er sich nicht viel abschält. (Peppermint der Kolonisten)." (Schlecht. in *Linnœa.* XX., 657.)

Following is a type specimen:—

"*Eucalyptus odorata*, Behr. and Schlecht (sine nom. ex herb., Behr.), Light's Pass, Sandberg, Nov. Holl. Austr., Dr. Ferd. Müller."

An identical specimen is labelled "*Euc. odorata*, var. *erythrostoma*," Light's Pass.

It is one of the specimens labelled "Madam Pepperweath," by Miquel, a mistaken reading by him for "in modum Pepper-menth, or *like peppermint*," as pointed out under *E. incrassata* in B. Fl. iii., 231.

The bark is often of that peculiar character known as "Peppermint," though softer than the generality of the barks of the coast Peppermints of Eastern Australia. It is very commonly intermediate in character between that of an Ironbark and a Box, hence the name "Ironbark Box," which is often applied to it in New South Wales, and which is very descriptive.

The timber is hard and remarkably interlocked or curly. It varies in color from brown to reddish brown, and even red. The color tones down with age; timber of the typical form from South Australia which was originally red is now dark brown. I have a series including many shades of color.

I have made an attempt to subdivide the various forms of *E. odorata*, but it is obvious that they run into one another; and, further, the same tree has different kinds of leaves (within limits) according to the season of the year and the part of the tree from which they have been taken. These remarks apply with more or less force to most species of the genus. One form, however, seems worthy of special mention.

Linear-lanceolate leaves, coriaceous, shiny, veins not strongly marked. This is perhaps the form most dissimilar in appearance to the type, and might be called var. *linearis*, var. nov.

It is the prevailing form in the "Whipstick Mallee" of New South Wales and Victoria.

SYNONYMS.

1. *E. calcicultrix*, F. v. M. (*E. odorata*, Behr., var. *calcicultrix*, Miq.).
2. *E. cajuputea*, F. v. M.
3. *E. perforata*, F. v. M.
4. *E. odorata*, Behr., var. *erythrandra*, F. v. M.
5. *E. odorata*, Behr., var. *erythrostoma*, F. v. M.
6. *E. porosa*, Miq.
7. *E. leucoxylon*, F. v. M., var. *pluriflora*, F. v. M.
8. *E. viridis*, R. T. Baker.
9. *E. polybractea*, R. T. Baker.
10. *E. Woollsiana*, R. T. Baker.

1. E. CALCICULTRIX, *F. v. M.*

"var. *calcicultrix*? (*E. calcicultrix*, F. Müll., Herb. et adnot.); foliis tenuioribus elliptico-vel oblongo-lanceolatis extenuato-apiculatis, adspectu subtrinerviis, 2-3¼ poll. longis. Locis calcareis ad Adelaide Nov. Holl. Austr. (F. M.)." (Miq. in *Ned. Kruidk. Arch.*, iv., 129, 1856.)

Following are specimens of the type:—

"13. *Eucalyptus odorata*, Behr., var. *calcicultrix*, Adelaide. Fl. hieme, F. Müller." (Herb. Sonder.)

"*Euc. calcicultrix*, F. M. (*odorata*), Nr. Adelaide." (Herb. Melb.)

This is the common Adelaide scrub form of *E. odorata*, sometimes known as "Black Mallee." "Of a dull and bluish type of green and fairly erect in its general growth" (W. Gill). Leaves narrow, fruits in heads.

"Peppermint," Adelaide (R. H. Cambage).

2. E. CAJUPUTEA, *F. v. M.*

"7. *Euc. cajuputea*, Ferd. Müll., Herb. ramulis tenuibus superne acutangulis, foliis linearibus apice acuminate vulgo sphacelatis, basi in petiolum brevem tortum attenuatis ut plurimum falcatis, coriaceis, costa tenui subtusparumper prominente, venis adscendentibus obtectis, una utrinque e basi subdistincta, umbellis axillaribus et lateralibus, 3-7-vulgo 5 floris, floribus breviter pedicellatis, operculo conico non mucronato calycis tubum obconicum fere æquante.

"*Flinders Range* (F. Müller).

"Petioli circiter 3 lin., folia 2½-4½ poll. longa, 2-4 vulgo 3 lin. lata. Pedunculi 2-3 lin. longi; pedicelli 1-1½ lin. longa, ancipites vel tetraquetri. Calycis tubus 1½-2 lin. quandoque subanceps." (Miq. in *Ned. Kruidk. Arch.*, iv., 126, 1856).

I have a specimen of the type, and it is normal *E. odorata*.

3. E. PERFORATA, *F. v. M.*

"13. *Eucalyptus odorata*, Behr., in *Linnæa*, xx., p. 657, n. 178. *E. perforata*, Ferd. Müll., Herb. olim. Dombey Bay, forma angustifol. frutex 5-8-pedalis as aquas stagnantes ad fl. Murray passim crebro; in terra calcarea undulata prope Adelaide (F.M.); ad Light's Pass et Sandberg (Behr.).

"Cortex ramorum juniorum interdum nigrescit; pedicelli pedunculique plus minus angulati rugulosi, filamenta denique 2 longa." F. Müll. (Miq. in *Ned. Kruidk. Arch.*, iv., 129).

4. E. ODORATA, BEHR., VAR. ERYTHRANDRA, *F. v. M.*

"var. *erythrandra*, Ferd. Müll., filamentis rubris, foliis latioribus, habiter robustiore.

"*Port Lincoln* Novæ Holl. austr. frutex 5-6-pedalis (F. Müller)." (Miq. *Ned. Kruidk.*, &c.)

Following are type specimens:—

"13. *E. odorata*, Behr., var. *erythrandra*, F. v. M. Murray, Dr. Behr." Copy of label in Herb. Sonder.

"*E. odorata* var. *erythrandra*, Ferd. M. (*E. perforata*, mihi aut.), Port Lincoln, Ferd. Müll." Copy of label in Herb., Melb.

Both of these specimens are *E. odorata*.

5. E. ODORATA, BEHR., VAR. ERYTHROSTOMA, *F. v. M.* (ANTE. P. 241).

6. E. POROSA, MIQ.

"19. *Eucalyptus porosa*, Ferd. Müll., ramulis tenuibus teretibus superne saltem leviter angulatis, foliis longuiscule petiolatis e basi acutâ subæquali lanceoatis vulgo falcatis attenuato-acuminatis coriaceis glanduloso-perforatis nitidulis, venis patule adscendentibus prominentibus tenere reticulatis ante marginem unitis, pedunculis axillaribus et lateralibus petiolo duplo brevioribus 4-6-floris, floribus subsessilibus, calycis tubo viridi obconico-obovato operculum conico-semiglobosum lutescens æquante vel subsuperante.

"In monte Kaisersstuhl Novæ Holl. austr., ab æstate ad autumnum florens, Flinders Range, *F. M.*

"*Euc. strictæ*, Sieb. affinis. Petioli ½-fere 1 poll. longi. Folia 3-4 poll. longa. Pedunculi 2 lin., alabastra operculata circiter æquantes. Foliorum venis valde distinctis ab *E. santalifolia*, cui cæteroquin haud absimilis, differt." (Miq. in *Ned. Kruidk. Arch.*, iv., 132).

Types of both are in Herb., Melb., and are *E. odorata*.

7. E. LEUCOXYLON, *F. v. M.*, VAR. PLURIFLORA, F.M.

"Umbellis plerumque 5-floris, pedicellis abbreviatis. *E. odorata?* Behr., Herb., non in Linnæa. Ad Gawler-town." (Miq. in *Ned. Fruidk. Arch.*, iv.).

This is *E. odorata*, Behr.

Following is a copy of Allan Cunningham's Journal (Oxley's Expedition) on the Lachlan River, under date 23rd May, 1817:—"Eucalyptus acacioides. A shrub about 12 feet high, allied to *E. saligna*."

I have received a specimen in flower from Herb., Kew. There is a fruiting specimen in Herb. Cant. In the absence of fruit its superficial resemblance to *E. stricta*, Sieb., var. *angustifolia*, Benth., is remarkable.

Cunningham confused his own plant with another. There is a specimen of *E. stricta*, Sieb., in Herb. Vindob., bearing the following label in Allan Cunningham's handwriting:—"Eucalyptus acacioides, C., Mar., 1817, Blue Mountains, N.S.W., 1817 (?), one of Sieber's species" (which, indeed, it really is).

8. E. VIRIDIS, R. T. BAKER., PROC. LINN. SOC., N.S.W., XXV., 316 (1900).

"Green Mallee, Red Mallee, Brown Mallee."

Type localities: On the hills near Girilambone, N.S.W., thence across country to Cobar; also 7 miles out from Coolabah, on the Wilga Downs-road."

9. E. POLYBRACTEA, R. T. BAKER, PROC. LINN. SOC., N.S.W., XXV., 692 (1900).

"Blue Mallee." Locality for type, West Wyalong, N.S.W.

10. E. WOOLLSIANA, R. T. BAKER.

Proc. Linn. Soc., N.S.W., XXV., 684.)

The following specimens appear to be referable to *E. Woollsiana*, R. T. Baker, which appears to me to be not specifically different from *E. odorata*. Mr. R. H. Cambage (*Proc. Linn. Soc.*, N.S.W., xxvi., 321) has pointed out the resemblance.

Further enquiry will, I think, bring to light many additional localities, for one form or another of the species, and for the present I confine myself to naming one variety, *linearis* (ante. p. 241), though it may be convenient to enumerate one or two others later on, including, perhaps, the very small fruited form.

E. Woollsiana has the numerous fine oil-dots of *E. odorata*, a

character it shares with *E. hemiphloia*, var. *microcarpa*, Maiden. The inclusion of *E. Woollsiana* in this variety (*Trans. R.S., S.A.*, 1902, p. 11) is perhaps erroneous. Certainly it is very close to *hemiphloia* var. *microcarpa*, and some botanists may consider it to be nearer to that species than to *E. odorata*, New South Wales.

1. "Mallee Box." Has a thin, tall trunk with a Box bark, ribbony at the branches, which issue at a good height from the ground. It grows amongst other Mallees in dry, stony situations. Mount Boppy, near Cobar (J. L. Boorman). Has very small fruits.

2. Girilambone to Condobolin (W. Baeuerlen), suckers of moderate width, broader than those of Narrabri (No. 10).

3. Condobolin (W. Baeuerlen), with coarser foliage and fruits than described, but with specimens typical for *E. Woollsiana*, R. T. Baker.

3A. A specimen of the timber of *E. Woollsiana* from Nyngan, sent to me by Mr. Baker, is identical with that of *E. odorata*, grown in South Australia.

4. "Coolibah," Murrumbidgerie, G. W. Railway (A. Murphy). The timber is almost as brown as No. 3A, or perhaps a shade redder.

5. "White Box." Forbes to Eugowra (R. H. Cambage).

6. "Narrow leaved Box." On the plains near Baradine (W. Forsyth).

7. "Large scrub or small tree," 18 miles from Dubbo (W. Forsyth).

8. "Box." Minore (J. L. Boorman).

9. Castlereagh River (Rev. Dr. Woolls) labelled "E. largiflorens," by Mueller.

10. "Box," Narrabri, where it is common (J. H. Maiden). Narrow lanceolate suckers.

11. "Narrow leaved Box," Moree (W. S. Campbell).

AFFINITIES.

(*a*) With *E. bicolor*, A. Cunn.

I am of opinion that *E. odorata* is closely related to *E. bicolor*, so much so that in districts far removed from the type of either they run into one another and partake of the characters of both. This is the case with Queensland specimens in particular. Some of the narrow-leaved small fruited forms of *odorata* resemble those of *E. bicolor* a good deal, but can usually be distinguished by the bright sap green of the former and the dull green, almost greenish white, of the latter. *E. odorata* has a hard scaly or Peppermint bark, that of *E.*

bicolor is usually more fibrous, although often enough the difference is but slight.

Mueller (Eucalyptographia) under *largiflorens*, says:—*E. odorata* is distinguished by

1. The generally broader leaves.
2. Simple axillary umbels.
3. More elongated calyces tapering rather more gradually into the stalklets.
4. By longer buds.
5. Larger anthers.
6. Longer fruits not contracted at the orifice.

I would say that, as a rule, *bicolor* has shorter filaments, blunter opercula and subcylindrical or ovoid fruits in contradistinction to the large hemispherical fruits of *odorata*. It prefers drier situations to *E. bicolor*.

The "Cooburn or Black Box" is a tree that is often placed under *E. bicolor*, but in my opinion its place is with *odorata*.

"Cooburn, Black Box; Ironbark Box, Bastard Ironbark."

This tree is referred to in the following passage:—"Cooburn, Black Box (*Euc. largiflorens*). Timber hard, tough, and durable; very lasting underground, of a red color. Used for fencing, rough buildings, and sleepers. Hab., stony ridges, scrub forests, N. & S. coast districts (*sic*). 100-120′ 2-3′. Not very plentiful. N.S.W. Catal. Col. and Ind. Exh., p. 199.)

It has a hard, scaly black bark.

It is referred to by Mr. R. H. Cambage (*Proceedings Linn. Soc., N.S.W.*, 1900, 716) when discussing hybridization.

It appears to be the "Ironbark Box or Bastard Ironbark" of Condobolin (R. H. Cambage); the Ironbark Box or Bastard Ironbark of Nymagee (R. H. Cambage); the Cooburn or Black Box of Narrabri (Forester McGee). It is a tree which requires further investigation, the first work to be undertaken being a list of localities which produce timbers known as "Ironbark Box" or "Bastard Ironbark."

(*b*) With *E. melliodora*, A. Cunn.

The figure (Suppl. pl. xvii.) Mueller's "Plants of the Colony of Victoria," labelled *E. odorata*, Behr. & Schlecht, is, in my opinion, *E. melliodora*, A. Cunn. The affinity of this species to *E. melliodora* has already been pointed out in the "Eucalyptographia." *E. melliodora* is sharply separated by its drooping habit and pale colored wood; the thickened rim round the ripening edge of the fruit is common in *melliodora*, though far more seldom seen in *odorata*.

(*c*) With *E. leucoxylon*, F. v. M.

E. odorata may be readily confused with *E. leucoxylon* as

regards the small fruited forms of the latter. For example, Mueller's variety *pluriflora* of the latter is *odorata*. The timber of *E. leucoxylon* is pale, and its bark less rough. The venation of the leaves of *E. odorata* is more marked than that of *E. leucoxylon*.

(*d*) With *E. fœcunda*, Schauer.

The affinity of these two species as regards foliage buds, fruits, and perhaps timber is undoubted. *E. loxophleba*, Benth., var. *fruticosa*, Benth., B. Fl. iii., 252, is, in my opinion, referable to *E. odorata* (*E. loxophleba* is now acknowledged to be a form of *E. fœcunda*). *E. odorata* has not yet been traced to Western Australia, and the relations of the two species require to be more closely studied.

(*e*) With *E. hemiphloia*, F. v. M.

Brown, in his "Forest Flora of South Australia," says that *E. odorata* is allied to *E. hemiphloia* in that State. This is doubtless true in other States also, and should be borne in mind. For some further remarks touching the affinity of *E. odorata* to *E. hemiphloia*, var. *microcarpa*, see under *E. Woolsiana*, p. 244. Mr. R. H. Cambage, *Proc. Linn. Soc., N.S.W.*, xxv., 714, has drawn attention to the similarity of the two species.

(*f*) With *E. calycogona*, Turcz.

The form of *odorata*, known as var. *linearis*, and called "Whipstick Mallee" in New South Wales and Victoria, undoubtedly presents similarity to *E. calycogona*, Turcz., var *gracilis*, Maiden. A very ready difference between them lies in the pointed opercula of *E. odorata*. *E. calycogona*, Turcz., var. *celastroides*, Maiden, in its narrowed-leaved forms, displays similarity in leaves, glaucousness, and shape of buds. The fruits, however, are ovoid, while those of *odorata* are hemispherical.

RANGE.

South Australia.

"No. 178. Eucalyptus odorata, Sud Australie, Dr. Behr., 1848." (Herb. Barbey-Boissier). A type specimen.

Kangaroo Island (J. G. O. Tepper), with rather broad leaves.

Following are specimens of *E. odorata* collected by Wilhelmi at Dombey Bay:—

"No. 13. *Eucal. odorata*, Behr., Dombey Bay," in Herb. Sond.

"*Euc. odorata* forma angustifolia, Dombey Bay, December, 1851." The leaves seem to me of normal width. (Probably *E. perforata*, F. v. M.).

The two following specimens precisely match Adelaide specimens:—

"Plantæ Müllerianæ, B. & Schlt.,* Nov. Holland. meridional, Dombey Bay." (Examined by Miquel).

"Eucalyptus odorata, B. & Schlt., Dombey Bay," in Herb. Barbey-Boissier ex herb., Miquel.

They have abundant small fruits, and precisely resemble Adelaide Mallee, and also specimens formerly labelled *E. calcicultrix.*

E. odorata, var. *cajeputea* (*E. cajeputea*, F. v. M.), Flinders Range (specimen in Herb., Melb.).

"19. *Eucalyptus porosa*, F. Müller." Flinders Range, Dr. F. Müller. Copy of label in Herb. W. Sonder in Herb., Melb.

A specimen in "Plantæ Müllerianæ, Nov. Holland meridional," bearing the words "Eucalyptus? Arbor, Port Lincoln." in Miquel's handwriting is *Euc. odorata.* (From Herb. Vindob).

The following specimens have purple flowers:—

Near Marble Range, Port Lincoln (W. Gill).

Possibly this is the var. *erythrandra* referred to at p. 243.

"13. *Eucalypt. odorata*, Behr., var. *calcicultrix*, Adelaide. Fl. hieme., F. Müller." Copy of a label by Miquel in Herb. W. Sonder in Herb., Melb.).

"One of the common scrub (Adelaide) forms apparently referable to *E. odorata.* This type is of a dull and bluish type of green and fairly erect in its general growth" (W. Gill).

"Peppermint," Adelaide (R. H. Cambage).

"*Eucalyptus odorata*, Behr. and Schlechtendal. Sine nom. ex hb. Behr., Light's Pass, Sandy Bay, Nov. Holl. Austr. Dr. Ferd. Müll." (Copy of label in Herb., Melb., in Mueller's handwriting).

"*Euc. odorata*, var. *erythrostoma.* Madam Pepperweath, Light's Pass." Copy of a label in Miquel's handwriting in Herb., Melb. The origin of the humorous mistake "Madam Pepperweath" has been already explained. Both specimens are identical.

St. Vincent's Gulf and upper part of St. Vincent's Gulf (W. Gill).

"Peppermint," Kapunda, "A Box tree, very hard wood" (R. H. Cambage).

Kapunda (W. Gill).

---

* Behr and Schlechtendal.

Near Houghton (Geo. McEwin, 1879).

York Peninsula (Tepper).

"13. *E. odorata*, Behr., var. *erythrandra*. F. M. Murray, Dr. Behr."

"*Euc. odorata*, var. *erythrandra*, Ferd. M. (*E. perforata*, mihi aut.), Port Lincoln, Ferd. Müll."

These two labels in Herb. W. Sonder in Herb., Melb., are on specimens identical in appearance.

E. leucoxylon, var. *pluriflora*, Ferd. Müll., in Herb. Behr., Gawler Town, Nov., 1848." (Noted by Miq. in *Ned. Kruidk. Arch.*, iv., and examined by me).

Emu Flat, 90-Mile Desert (W. Gill). Marked rim to green fruit. This specimen well exhibits the bright yellow green or sap-green foliage so commonly seen in this species in the interior.

Bundaleer Forest (J. H. M.), with broad and narrow leaves.

"Mt. Remarkable, F. Mueller, 1851." With narrow lanceolate leaves, venation hardly observable. Labelled *odorata* both by Mueller and Bentham.

Mr. Walter Gill, the Conservator of Forests of South Australia, writes to me about *E. odorata*:—

"It is growing on the Mount Brown Forest Reserve in the Flinders Range, about 9 or 10 miles south of the town of Quorn. The Reserve is situated about 20 miles a little north-east of Port Augusta. The Flinders Range runs from Quorn south as far as west of Laura. There is a lot of *E. odorata* growing round Melrose, the town under Mt. Remarkable, and some of it is very large timber (for *odorata*). It may be said that the species is general in the southern portion of the State."

"Peppermint. Type of Mallee growing in the Flinders Range country, about 10 miles south of Quorn, and just a little north of Mt. Brown. This is another type differing from the Adelaide specimens (3,324/99) in having the color of the leaves bright sap-green instead of a bluey green, and having the inflorescence of a far more paniculate and terminal character than the other. Soil dirty cream color overlaying soft slaty rock of a dull yellow inclining to green, and sometimes also overlaying marl or limestone" (W. Gill). Flinders Range at Quorn (Max Koch).

In South Australia this species is known as "Peppermint Gum" and "Box Gum."

VICTORIA.

Wimmera district, near Nhill, with red flowers. D'Alton and Walter, July, 1892.

North-west Victoria, April, 1888 (C. Walter).

"Box," Serviceton, March, 1901 (R. H. Cambage).

Wimmera district, Oct., 1900, with shiny leaves (C. Walter).

Whip Stick Gum; covers a large tract of country north of Bendigo (W. W. Froggatt, July, 1892).

"Mallee," Eaglehawk Flagstaff (A. W. Howitt), August, 1891.

"Mallee," Rushworth (A. W. Howitt).

All these specimens with narrow leaves, and belong to the new variety I propose to call *linearis*. Such specimens were at one time called *E. gracilis*.

"Mallee," Rushworth (A. W. Howitt) (128).

"Mallee," St. Arnaud (A. W. Howitt) (126).

These specimens have a bluish, glaucous cast, and resemble those of *E. fruticetorum*, F. v. M. (*E. calycogona*, Turcz., var. *celastroides*, Maiden) a good deal, but the fruits of the *odorata* specimens are more hemispherical.

New South Wales.

The following note was sent by the late K. H. Bennett, of Ivanhoe, via Hay, with a twig that I refer to *E. odorata*. It is a useful general description of Mallee in this State:—

"This is our most common tree, having a very wide distribution, and frequently covering large areas of country with an almost impenetrable scrub which is either entirely destitute of undergrowth or vegetation of any kind, and the ground thickly covered with nodules of limestone; or else produces a dense growth of spinifex, better known as porcupine grass, which, when freshly springing after it has been burnt, cattle are as fond of it as they are also of the grain or seeds. These scrubs are habitat of that singular bird, the Lowan, or Mallee hen. When growing in dense masses, this tree rarely exceeds 12 to 14 feet in height; but individual trees on the outskirts of the scrub are often found to be quite 30 ft. high. The straight lance-like stems of those growing in masses are very useful in the construction of gates and hurdles, as the wood is remarkably tough. The natives obtain water from its roots."

Euc. acacioides, A. Cunn, Mss. "New Holland., A. Cunningham, Hooker, 1835." Herb., Kew, Lachlan River. From several herbaria.

"Box Mallee of the Western districts." H. Deane (Dec., 1892).

Ironbark Box, Condobolin (R. H. Cambage).

Mallee, Condobolin, Forester Kidston (Sept., 1894).

The Lachlan, Miss Clements.

These are two specimens belonging to var. *linearis*. Wyalong, "Willowy, light-colored stems" (W. S. Campbell). Mallee, Wyalong (Forester J. G. Postlewaite, March, 1900). Bluish, glaucous cast, narrow leaves, very similar to *E. fruticetorum*, but with hemispherical fruits.

Blue Mallee, Wyalong (R. H. Cambage), September, 1900. Type of *E. polybractea*, R. T. B., kindly supplied by Mr. Baker. Identical with South Australian specimens.

White Ironbark or Ironbark Box. No. 1. Barmedman (R. H. Cambage). "Bark rather yellow, smoother than Ironbark; rougher than Box. Growing near *E. sideroxylon*. This particular tree showed more like Ironbark than usual." The fruits have a rim, and those of South Australian *E. odorata* often have such a rim. The foliage is dull like that of some Wyalong specimens referred by me to *E. odorata*.

"Known as Whipstick Mallee from its erect, slender stems. Its fruits are generally small, but vary in size very much. The bark is brown at the base and white above. This is the most easily distinguished of all the Mallees owing to its narrow green leaves. In some cases it grows as a single tree 50 feet high and a foot in diameter" (R. H. Cambage). (*Proc. Linn. Soc., N.S.W.*, 1900, p. 602.)

Cobar (W. Woolls).

Nymagee (J. Wharton Cox).

Ironbark Box or Bastard Ironbark, Trowell Creek, Nymagee (R. H. Cambage).

Girilambone (E. Betche, October, 1886).

Green Mallee. Type of *E. viridis*, R. T. Baker. Girilambone, Jan., 1900 (W. Bauerlen).

"Plentiful around the hills of Girilambone. Small thin stems, ribbony at base, white at tips" (J. L. Boorman, June, 1901).

Nyngan (Forester G. Martin).

"Mallee Box," Minore. "Trees on Ironstone ridges in company with Mallee. Tall trees, 6 in. to 1 ft. in diameter, with grey, box-like bark, branches clean. Sap-wood pale, centre red, leaves long, pendulous, hence sometimes known as long leaf Box" (J. L. Boorman). Typical for *E. odorata*.

"Bastard Ironbark or Bastard Box. A very tall and straight tree, growing amongst *E. crebra*, but has quite a different appearance. Is sometimes used as a substitute for Ironbark; is only found in ones and twos; rare in the Dubbo district" (J. L. Boorman). Small fruits, transit to *E. bicolor*.

"Black Box or Cooburn," Narrabri district. In bud only (Forester McGee).

QUEENSLAND.

Mount Elliott, Fitzalan. "Eucalytpus (Leiophloiæ), placed by Bentham with *E. largiflorens*, seemingly with injustice" (Mueller in Herb., Melb.). This is one of the forms which, in my opinion, undoubtly shows transit to *E. odorata*.

Ravenswood, Burdekin River (S. Johnson).

Similar to preceding. Leaves, buds, and flowers only are available in both cases; the pointed opercula, and more prominent veins to the more shiny leaves point to *E. odorata*, with which, not without doubt, I place it for the present.

Notes on Loranthus exocarpi.

By C. F. Johncock.

[Read September 8, 1903.]

These notes may be taken as a continuation of those offered in my paper of November 5, 1901, except that they are the result of observations carried on in another district.

The number of different kinds of trees serving as host-plants in the vicinity of Morphett Vale is rather surprising, as the following list will show. By independent observation and by enquiry I have, up to the time of writing, been able to examine growths on the undermentioned trees :—

a. Native Trees.—*Casuarina quadrivalvis* (sheaoak), *Acacia salicina*, *Eucalyptus rostrata* (red gum), *Santalum acuminatum* (wild peach), *Exocarpus cupressiformis* (native cherry), *Callitris cupressiformis* (cypress pine).

b. Exotics.—Apple, almond, pear, quince, oleander, lemon, olive, fig.

With regard to the specimen found on the lemon-tree, I was struck with the fact that the petals were no longer red, with green tips, but bright lemon-yellow, with green tips. Whether this change in colour is accidental, or induced by the nature of the nutrient material derived from the host I am in no way prepared to say at present. I hope, however, to give the question attention next season.

The greater part of the growths I found occur on *C. quadrivalvis.* This must be on account of the excellent opportunity offered for the germination of the seed in the most favourable situation. The bark of the tree being characteristically rough, it naturally follows that any seed deposited on its branches is not likely to be displaced again. Second in order of infection comes *E. cupressiformis*, another rough-barked tree. The other cases are, so far, unique in my experience.

In the same paper I also said concerning the wattle bird—" I hope to be able shortly to establish proof " of its being a means of distributing seeds . . ." That proof I have since obtained. Several birds, shot in different places in the Willochra district, contained seeds in their digestive apparatus ; and I have more than once observed *Acanthochaera carunculata* picking the berries in this locality.

Dicaeum hirundinaceum I have very rarely seen, but I have seen it eating the berries also. It is to neither of these birds, however, that I ascribe the work of distributing the seeds. A far more important part is played by the Silver-eye—*Zosterops cerulescens.* This bird frequents small, thickish trees, and *Casuarina* is just the kind of tree to this bird's taste. Seeing, therefore, that the seeds are part of its winter food, and the tree a favourite shelter, it appears pretty certain that the despised Silver-eye is the chief agent in the dissemination of the particular *Loranthus* under consideration.

Another bird which must be regarded as a distributor is *Grauculus melanops*, a winter visitant to this district. When insects become scarce, a mixed diet is resorted to. I have on many occasions watched *Grauculus* hovering over the African box-thorn bushes in the hedges, picking off the ripe berries. The fruit of *Loranthus* is also acceptable, and readily eaten. Being rather weak of flight, a little hovering seems to tire the bird, and it then flies to a perch on the top of some neighbouring tree. Where the *Casuarinæ* grow plentifully, *Grauculus* must of necessity deposit many seeds as it perches on the tree-tops between its swoops at the *Loranthus* clusters.

Have we not now a pretty satisfactory explanation of the attachment of *L. exocarpi* to the *Casuarinæ* in the habits above described of the two birds *Zosterops* and *Grauculus?* Probably in the case of *Zosterops* there has grown up a certain amount of interdependency—the tree sheltering and affording food to the bird, and the bird in its turn securing the spread of the mistletoe. To *Zosterops* also must be credited the occurrence of the parasite on the fruit trees, as the Silver-eye is a notorious fruit-eater and frequenter of orchards all the year round. I would hint again at the perhaps small part played by *Acanthiza*, which nests in the mistletoe clumps at the end of winter, and so may often carry seeds sticking to its feathers, &c., as indeed all the birds mentioned above are almost certain to do. The questions involved by the consideration of the exact modes of distribution of these birds are beyond the scope of this paper. I propose to deal with that point in a future contribution.

Discussion.

Mr. J. G O. Tepper doubted whether *L. exocarpi* occurred on garden fruit-trees, as stated by the author. The only well-authenticated instance of a *Loranthus* species being abundantly parasitic on any kinds of fruit-trees are those recorded from Victoria, &c., of *L. celastroides.* The view that birds which feed on the berries of *Loranthus* are the principal agents in their distribution he regarded as untenable, as also the assumption

upon which it is based that the *Loranthus* can only germinate after passing through the digestive organs of birds. Experience has shown that they will germinate freely when fixed by the pulp to a suitable spot on a branch of one of its natural hosts. An important consideration is that by the passage of the seeds through the body of the bird they become deprived of their adhesiveness, which would imply that the latter quality was unnecessary for the dissemination of the species.

Mr. Samuel Dixon corroborated the statement of the author as to the occurrence of *Loranthus* on fruit trees, he having seen several of these parasitic plants flourishing on a Turkey fig, without any apparent detriment to the tree. With respect to the propagation of the plant by bird droppings, he would like the author to obtain corroborative evidences of such.

The Author, in reply, stated that he had made his determination of the *Loranthus* growths, or the trees mentioned, with the greatest care, closely examining both the flowers and the foliage, and was confident of the certainty of his results. He made no attempt in his papers to define exactly the part played by the birds mentioned, or others, in the distribution of the seeds, but he wished to emphasise the fact of their distribution by such agents.

The Port Victor Granite.*

By H. W. Gartrell.

[Communicated by W. G. Woolnough, B.Sc., F.G.S.]

[Read October 27, 1903.]

The granite outcrops at Port Elliot, Port Victor, and Rosetta Head form a part of the northern edge of the extensive granitoid belt which follows the eastern side of the Mount Lofty Ranges, and skirts the southern side of Kangaroo Island. The granite is intrusive, and is seen at the places mentioned and elsewhere to penetrate mica schists or other highly metamorphosed rocks.

The rocks in question possess considerable interest in their comparative study with other outcrops in this vast granitic area as well as from the light they may throw on the lines of distribution which have been followed by the glacial erratics of the older and newer glacial periods of South Australia.

This paper contains the results of a careful examination of the large porphyritic felspars of the rock.

Preparation of the Material.

Crystals were broken from the rock and freed from adherent quartz. These were then broken into small fragments in a steel die. All flakes of mica and fine dust were rejected and the fragments each carefully examined to eliminate any fragments of quartz. Large fragments were further broken to prevent inclusions of mica and no fragments accepted with a greater dimension than one-eighth of an inch. The granules were then pulverised in the steel die and the powder finely ground in an agate mortar. The powder was used in an air dried condition.

Chemical Analysis of the Felspar.

At first ·75 gramme was taken for the determination of silica and bases in anticipation of small quantities of lime and magnesia, but this was found unwieldy and about ·5 gramme taken. The fused mass showed a faint greenish tinge due to a trace of manganese. The silica was then estimated by the method recommended by Hillebrand, i.e. evaporating to dryness, filtering and

*An Abridged Reprint of the Essay which obtained the Tate Memorial Medal, 1903.

re-evaporating the filtrate. In one case only was the alumina precipitate stained (by iron), the amount present was, however, far too small to estimate volumetrically.

The amount of magnesia obtained was unweighable.

THE ALKALIS.

Two methods were used.

(1) *That of Lawrence Smith.*—About half a gramme of rock was used. A difficulty was here met with as the mass was found to have fused in places to the sides of the tube. On repeating the same difficulty was met. A lower temperature was then tried, and the mass came out readily. This, however, gave a low alkali content. The other method tried was to increase the lime proportion. With twelve parts of calcium carbonate instead of eight the mass came out readily from the crucible.

(2) *Estimation of Alkalis by the Hydrofluoric Acid Method.*—Fearing that the large percentage of potash might give rise to loss through volatilization in the original fusion, and also as a check, this method was used. It gave exactly the same result as the first method for potassium, but a slightly higher value for sodium.

	I.	II.	Mean.	Corrected for Moisture.	Molecular Proportions.
SiO_2	64 67	64·40	64·54	64·93	1·0782
Al_2O_3	19·24	19·43	19·34	19·45	·1908
Fe_2O_3	trace	trace	—	—	—
MnO	trace	trace	—	—	—
MgO	trace	trace	—	—	—
CaO	1·22	1·26	1·24	1·24	·0221
Na_2O	2·91	2·86	2 88	2·89	·0466
K_2O	11·86	11·82	11·84	11·91	·1266
H_2O on ignition	·58	·58	·58	—	—
Total ...	100·48	100·35	100·42	100·41	—

Working out the silica and alumina equivalents for lime and alkalis we get 1·0834 and ·1953 respectively. These numbers are equivalent to an excess of ·31 per cent. of SiO_2 and ·46 per cent. Al_2O_3 over the amounts found by analysis. The error is more probably in the lime and alkalis, particularly the latter, as there were not sufficient platinum utensils to carry out all the operations in platinum.

The formula of the felspar is thus—

$$Or_{23}\ Ab_8\ An_4, \text{ or nearly } Or_6\ Ab_2\ An_1$$

and its chemical properties place it in the *Anorthoclase group.*

The results of chemical analysis were checked, as far as possible, by measurements of the physical and optical properties, with very concordant results.

Crystallographic Measurements.*

These measurements of the angle between the (001) and (010) cleavages were made by means of a Miers' goniometer reading to one minute. The cleavage flakes give fair to good images. The maximum value obtained was 89° 56′, the minimum 89° 45′ with an average of 89° 53′ for nine readings.

Optical Measurement.—No diamonds being available for sectioning, this part of the work was postponed as long as possible in the hope of their arrival. When this was finally despaired of and the work commenced everything had to be done in a short time. Small fragments of the felspar were broken off and pieces with two good cleavages selected. These were then broken parallel to one cleavage and the two parts ground down on different cleavages and mounted. No oriented sections other than these could be cut. The extinction angles were carefully measured. No instrument was available for the measuring of the axial angle. The sections were examined under convergent light with a Swift's $\frac{1}{8}''$ NA 0·97 objective.

Most of the sections exhibit excessively fine multiple twinning. Those parallel to (001) show striations after both albite and pericline laws, those parallel to (010) exhibit pericline lamellæ only. The fineness of the lamellæ, sinking to submicroscopic dimensions, makes optical measurements very difficult. As the mean of a large number of readings the following results were obtained :—

Extinction on basal plane, measured from the trace of (010), varies from 2° to 5°. Extinction on (010), measured from the trace of (001) is 8° in the positive sense. Sections parallel to (010) give a well defined figure in convergent light, practically centrally situated in the field of the microscope the optical sign is negative. Dispersion is noticeable, $\rho > v$.

Specific gravity of the Felspar.

(1) *By means of Klein's solution*—The indicators used were Goldschmidt's Natural Indicators by F. Krantz of Bonn. The particles were found to nearly coincide in density with cordierite 2·579, some were a little lighter and some a little heavier, but none reaching the next values 2·566 and 2.591. The density might therefore be taken as 2·58.

---

*The phenocrysts of felspar are fairly idiomorphic, but it is difficult to obtain isolated crystals sufficiently perfect for external measurements.—W. G. W.

(2) *By the Specific Gravity bottle.*

Results	2·579	Mean.	2·582
	2·584		—

Refractive Indices of the Felspar.

No refractometer being available indirect methods were used and approximate results obtained.

The presence of the acid oligoclase furnished an easy and accurate qualitative test, by employing Becke's bright line method.

The felspar under consideration was found to have a lower index than that of the oligoclase

For ordinary differences, however, this gives no idea of the amount of difference, but we may say that the values are less than the following:—

1·542	1·538	1·532	Oligoclase	Levy.

For exact determinations the principle was extended. Although the amount of movement cannot be taken as a basis of calculation in such an experiment, if we obtain two substances which give no movement, we may assume that they are of the same refractive index.

Two sections were then taken, one parallel to (001) and one to (010), and a portion of the cover-glass removed from each. The balsam was then removed, first by turpentine and then by alcohol. A drop of Klein's solution was placed in contact with the mineral, and Becke's method applied, retaining the polariser, and placing the section with its directions of vibration successively parallel to the principal plane of the polariser.

The solutions employed were, by trial and error, adjusted so that their refractive indices were identical with those of the mineral in its different positions.

In this way four solutions were obtained. The refractive indices of these were measured by means of a spectrometer. Great difficulty was experienced in making these measurements on account of the very strong absorptive power of the liquid. Sodium, potassium, and strontium lights were tried, but of these only potassium gave any results at all. Then the lights from incandescent gases—hydrogen, nitrogen, oxygen, helium, and argon and chlorine—were experimented with with small success. Finally the illumination was obtained by means of an electric spark between terminals composed of an alloy consisting of zinc, cadmium, mercury, and tin in molecular proportions, prepared by Sir William Crookes.

In this way the minimum refractive index (α approximately) is found to be 1·513; the maximum (γ approximately) 1·525, but from the difficulties of measurement the results are only roughly correct.

Summary of the Properties of the Large Porphyritic Crystals of Anorthoclase.

Colour—Flesh pink, subtranslucent to opaque.

Crystalline form—Not determined.

Cleavage—Perfect parallel to (001) and (010), the cleavage angle being 90° 7′.

Polysynthetic twinning after albite and pericline laws on a very fine scale. Twinning after Carlsbad law frequent.

Specific gravity—2·582.

Refractive index between 1·513 and 1·525.

Dispersion—$\rho > v$.

Composition—$Or_{23}\ Ab_8\ An_4$.

Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species.

By the Rev. T. Blackburn, B.A.

[Read October 27, 1903.]

XXXIII.

CARABIDÆ.

PHORTICOSOMUS.

P. calcaratus, sp. nov. Piceo-brunneus, elytris postice et pronoto anguste testaceo-marginatis; capite permagno, sparsim obsolete punctulato, utrinque inter oculos impresso, sutura clypeali profunde sulcata; prothorace quam longiori fere duplo latiori; postice quam antice vix angustiori, leviter canaliculato, latitudine majori paullo ante medium sita, lateribus sat anguste reflexis fortiter arcuatis ante basin sinuatis, angulis posticis sat acute rectis anticis sat rotundatis sat prominentibus; elytris fortiter striatis, interstitiis leviter convexis (3° pone medium punctura setifera instructo); tibiis anticis ad apicem processu magno acuto extus armato et supra hunc denticulis 5 parvis; tibiis posterioribus 4 extus denticulis circiter 8 instructis et ad apicem dilatatis. Long., $6\frac{1}{2}$ l.; lat., $2\frac{1}{2}$ l.

Remarkable by the strongly defined external sculpture of its tibiæ. *P. Horni*, Sloane, has an apical external process on the front tibiæ, but in that species it is shorter and blunter and the denticulations above it are very much smaller; no other *Phorticosomus* known to me has a similar tibial structure. In other respects this species resembles the insect that Mr. Sloane agrees with me in regarding as *P. grandis*, Cast., but has a considerably more strongly transverse prothorax, that segment being scarcely less (by measurement) than twice as wide as long.

Tropical Queensland; taken by Mr. T. W. G. Blackburn.

LOXANDRUS.

L. micantior, sp. nov. Modice elongatus, postice nonnihil dilatatus; minus depressus; niger, certo adspectu violaceo-iridescens, tibiis antennisque picescentibus, palpis tarsisque ferrugineis; oculis modice convexis; prothorace quam longiori circiter ut 5 ad 4 latiori, antice quam trans basin multo angustiori, longitudinaliter canaliculato, postice

fortiter minus crebre punctulato, utrinque ad basin sulco elongato longitudinali impresso, antice leviter emarginato, angulis posticis obtusis, latitudine majori vix ante medium sita, lateribus sat arcuatis anguste (postice magis late) reflexis; elytris fortiter striatis, striis crenulatis, stria abbreviata scutellari nulla, interstitiis sat anguste sat fortiter convexis (3° ante medium punctura instructo). Long., 4 l.; lat., 1½ l.

Differs from all other Australian *Loxandri* known to me or which I can ascertain to have been described, by the evident reflexed margin of its pronotum (the furrow of which is somewhat rugulose) and by the strong puncturation across the base of that segment. *Feronia* (*Pœcilus*) *rufilabris*, Cast., seems to be a *Loxandrus*, and is said to have its prothorax "punctated" behind, but the prothorax of that species is said to be broader in front than behind, and there is no indication of any unusual character in the lateral margin.

N. Queensland.

NITIDULIDÆ.

OMOSITA.

O. discoidea, Er. I have before me specimens of this insect taken in Tasmania by Mr. Griffith. I believe it has not been hitherto recorded as Australian.

LAMELLICORNES.

COPTODACTYLA.

C. glabricollis, Hope. This name was associated by its autho- with a very brief description of a specimen (which was evidently a female) from Port Essington, on the north coast of Australia. Harold (Ann. Mus. Gen., 1877, p. 39) furnishes a full description of both sexes of a species which he considers to be that of Hope. It is unfortunate that he states neither the ground of his identification nor the locality where his specimens were taken. It is to be noted that the size he attributes to the insect (15-16 mm.) is much greater than that quoted by Hope (5 l.). I believe, however, that the identification is correct. I have before me a long series of specimens of *Coptodactyla* from various localities in Northern Australia (including some from near the original locality) which I regard as appertaining to one very variable species; and among them are some certainly identical with those described by Harold. None of these examples, however, are quite so small as Hope's measurements, or quite so large as Harold's. They vary in color from red-brown to deep black; in size from 5½ l. to 7½ l., and also very greatly in the development of the frontal horn in the male, which in some

examples is represented only by a scarcely elevated and very short transverse carina and in successive developments becomes a well elevated carina, then a carina so much elevated as to be a strong tubercle, then a short horn, and eventually a fairly long horn. After careful examination of this series I cannot find any character to rely upon for regarding these forms as representing more than one species—the sculpture of the surface (*e.g.*) being identical in them all and agreeing with Harold's description. I notice that the males differ from the females in the very evidently less transverse form of their pygidium.

C. ducalis, sp. nov. Fem. Oblonga; sat convexa; nitida; nigra; antennis ferrugineis; capite antice undulatim ruguloso, postice sat manifeste punctulato, clypeo antice obtuse bidentato; pronoto in disco vix manifeste (angulos anticos versus subfortiter) punctulato, puncturis sat magnis prope marginem basalem impresso, stria marginali trans apicem continua, carina sublaterali a fovea sublaterali oblique ad marginem lateralem ut *C. glabricollis*, Hope, producta; elytris sat profunde striatis, striis obsolete punctulatis (8ª antice abbreviata, 9ª ante medium cum margine laterali confusa); pygidio convexo lævi. Long., 8½ l.; lat., 4½ l.

Larger than any of the three previously described Australian species. Differs *inter alia* from *glabricollis*, Hope, by the very much finer puncturation of its elytral striæ; from *Baileyi*, Blackb., by the emarginate front margin of its clypeus; and from *subœnea*, Harold, by its non-metallic elytra, and by its pronotum punctured like that of *glabricollis*, and having the marginal stria continuous across its front (as in *glabricollis*).

N. Queensland (Mr. Cowley).

ONTHOPHAGUS.

Australian species of this cosmopolitan and extremely plentiful genus have been described under 105 names. Fourteen of them have been set aside (and stand so in Masters' Catalogue) as synonyms, but two of those fourteen (*desectus*, Macl., and *inermis*, Macl.) I believe to be good species, as indicated more particularly below, the rest (so far as I have means of judging) being rightly treated by Masters. There are, however, nine names treated by Masters as valid (or published at a later date than that of his Catalogue) (viz., *quinquetuberculatus*, Macl.; *Schmeltzi*, Har.; *devexus*, Macl.; *discolor*, Hope; *decurio*, Lansb.; *promptus*, Har.; *patruelis*, Har.; *Duboulayi*, Waterh.; and *hostilis*, Har.) which appear to me to be more or less certainly synonyms and on which notes will be found below. I also suspect,—but am less confident,—that *propinquus*, Macl.;

ntegriceps, Macl., and *humeralis*, Macl., are synonyms. These also are discussed below. Consequently of the 105 names under which Australian *Onthophagi* have been described I regard only 84 at most as at present deserving to stand, and to these I now add 26 new species, bringing up the total number to 110.

The descriptions of the Australian *Onthophagi* are scattered through the Transactions of a great number of Societies,—European and Australian,—and the types through a great number of European and Australian Museums; probably not a few of the types have perished. Many of the descriptions,—especially those of the species from the Port Essington region and from the far North of W. Australia,—are of so slight a character as to be absolutely useless without examination of the types or at least of specimens known to be from the original locality. Under these circumstances there is no one in a position to deal with the Australian *Onthophagi* in any final or authoritative manner. The only method by which such an end can be even approached is that of the provision, by someone possessing data that are at least exceptionally plentiful, of a memoir bringing together the results of a careful study of all the existing descriptions and indicating the characters of the different species in a collective form. This can be no more than a provisional treatise, but it will at least be a foundation for further investigation, and the (probably numerous) inaccuracies that such a tentative revision must contain can be corrected by those who have the means of examining the types that its author has not had access to. Such an essay seems to be the inevitable first step towards a satisfactory treatment of the subject. I happen to possess, or have access to, a considerable number of specimens from the localities that I have mentioned above as those of the most insufficiently described Australian *Onthophagi*, and therefore have been able to identify with some confidence most of Hope's species. The specimens referred to were taken by my friend the late Dr. Bovill, by Mr. J. G. O. Tepper, and by Inspector Fœlsche,—those of the last two named being in the S. Australian Museum. I think, therefore, that I am in a somewhat exceptionally favorable position for furnishing a tentative revision of the Australian *Onthophagi* which I now lay before the Royal Society of S. Australia, not with the expectation that it will prove in all respects accurate, but with the hope that it may prove to be a fresh starting point and will elicit information from various sources by means of which something more satisfactory may follow. I trust it will be found possible at least to identify by means of the following descriptions and notes the insects to which I attribute the various specific names and if so it will be easy for those who have access to types that are not within my reach to call attention to the points that require amendment.

Of the 84 already described Australian *Onthophagi* that seem likely to be valid species, 53 are, I think, before me, leaving 31 which I have not to my knowledge seen. In the following pages there will be found first a tabulation of these 53 species and of the 26 new ones described below; second, descriptions of the new species and notes on a good many of the older ones; third, a tabulation of the characters of the species not known to me drawn up after careful study of the descriptions of their authors (this, of course, has to be founded on such characters—often very unsatisfactory—as the authors have happened to mention); and fourth, a few notes on each of the species not known to me, quoting where it seems desirable the salient points in the descriptions. This last part seems necessary in order to render the memoir complete, although in several instances I have been able only to furnish a brief abstract of notes that are not readily accessible in Australia.

To the difficulties I have already indicated as hindering a satisfactory treatment of the Australian *Onthophagi* must be added this, that there is no genus in which the difference between the sexes is in most species more strongly marked or more variable, while at the same time, so far as I know, there is no invariable external character by which the sex of a specimen can be determined positively. I believe that elongation of the front tibiæ is invariably a male character, but there are many species in which the tibiæ of the male are not elongated; similarly, a great development of frontal protuberances is usually a male character, but in most (if not all) species these characters are enfeebled in some males to the extent of being unrecognisable, and in a few species the frontal protuberances are stronger in the females than in the males. The front of the pronotum is, I think, never more complex in the female than in the male, and in general it is similar in character in both sexes of a species, but more feeble in development in the female, but there are a few species in which it is *essentially* different in the sexes. It is not usual for the puncturation of the pronotum and elytra to differ much sexually, but here again there are exceptions. Nevertheless, it has been the general practice of authors to form subdivisions of the genus on the sexual characters. De Harold, for instance, Ann. Mus. Gen., 1877, p. 51, says that the primary divisions are dependent on whether the male frontal protuberances are median or lateral. There is no need to discuss here the soundness of that opinion in the abstract, though I may say in passing that as far as I am concerned I do *not* believe the sexual characters to be the most fundamental, but the practical inconvenience of such a classification is obvious—so obvious, indeed, that there is no occasion to do more than just mention it.

The non-sexual characters that I find to be most reliable for distinguishing species are in the basal structure of the pronotum (this character is recognised by Dr. Erichson in the "Insecten Deutschlands" for sub-dividing *Onthophagus*), the size and structure of the eyes, the coloring (metallic or non-metallic) of the surface, the puncturation (which does not usually vary sexually to any considerable extent), the presence or absence of pilosity on the upper surface, and the structure of the claws.

For tabulating the genus, as regards its Australian species, I adopt six divisions founded primarily on the structure of the base of the pronotum, which assumes four different forms, and secondarily on the structure of the eyes.

In the first group the lateral gutter and marginal raised edging of the pronotum pass evenly across the base without the lateral edging becoming enfeebled close to the hind angles, and the eyes are wide, nitid, and not perceptibly facetted on the urface.

In the second group the base of the pronotum is as in the first group, except that the raised edging is suddenly and notably enfeebled close to the hind angles; while the eyes are as in the first group.

In the third group the structure of the pronotum is as in the second group, but the eyes are very distinctly facetted.

In the fourth group the base of the pronotum is not strictly speaking margined, but it is *visible* as a narrow more or less flattened band,—this pseudo-margin being most conspicuous when looked at obliquely from behind. The eyes are variable in structure.

In the fifth group the base of the pronotum has no gutter or flattened space but is bordered by a more or less defined raised edging. In many instances care is necessary in examining this edging to avoid confusing it with a fine carina-like projection hindward on the hind face of the base of the pronotum which is present in (at least most of) the *Onthophagi* and seems to be related to a depression on the front face of the elytra. The eyes in this group are variable in structure.

In the sixth group the base of the pronotum is absolutely even and is not bordered by any gutter, raised line or depression. The structure of the eyes is variable.

It would be possible to increase the number of groups by three if full use were made of the characters of the eyes in Groups 4, 5, and 6; but as this would remove into different groups species that seem too closely related for such separation I have contented myself with the six groups specified above. As it is, there are species which seem to connect Groups 4 and 5 rather closely with Group 6, but such overlapping is almost always met with in the division of an extensive genus into groups.

The following tabulation shows the relation to each other of the groups :—

A. Raised marginal edging of sides of pronotum continues evenly along the base (all the known species large and rugulose) ... ... Group I.
AA. The raised marginal edging of sides of pronotum becomes at least enfeebled at the hind angles.
B. Pronotum bordered at base by a distinct gutter and raised edging.
C. Eyes not visibly facetted on surface ... ... Group II.
CC. Eyes distinctly facetted on surface ... ... Group III.
BB. Pronotum bordered at base only by a pseudo-margin (as described above) ... ... Group IV.
BBB. Pronotum bordered at base only by a raised line ... Group V.
BBBB. Pronotum not margined at base ... ... Group VI

It should be added that occasional specimens of those *Onthophagi* the surface of whose eyes is not perceptibly facetted have the eyes of a pale colour,—perhaps due to immaturity,—and that in that case underlying facets are quite conspicuous through the smooth surface, but there is not any difficulty in seeing that the surface itself is quite smooth.

In the following tabulation the characters cited (unless otherwise stated) are as far as known to the author common to both sexes.

It is quite possible that the examination of the other sex of some few species of which I have seen only one sex may prove that I have in tabulating relied upon characters that are not truly specific in respect of those particular species, but I am very confident that all the *Onthophagi* before me and tabulated below as distinct species, are really so.

Tabular statement of the characters of the Australian *Onthophagi* :—

GROUP I.

A. A horn or tubercle in both sexes on pronotum between median protuberance and lateral margin.
B. The frontal projection in both sexes a horn pentacanthus, *Har.*
BB. The frontal projection in both sexes a lamina ... ... Leai, *Blackb.*
AA. No horn or tubercle in either sex on pronotum between median protuberance and lateral margin.
B. The front of the frontal horn rugulose and opaque ... ... Mniszechi, *Har.*
BB. The front of the frontal horn (at any rate in the male) nitid and almost smooth ... ferox, *Har.*

GROUP II.

A. Front of pronotum subvertical (in both sexes so far as known).
B. The retuse front topped by a widely arched carina and (on each side) a tubercle.
C. The basal gutter of the pronotum dilated hindward in the middle.

D. Lateral edging of pronotum in front of middle strongly raised.
E. Interval between the two external tubercles of pronotum not or scarcely wider than head.
F. Hind part of pronotum very nitid and mostly smooth ... ... laminatus, *Macl.*
FF. Pronotum (except retuse front) entirely rugulose and but little nitid ... ... Cowleyi, *Blackb.*
EE. Interval between the two external tubercles of pronotum much wider than head... ... ... atrox, *Har.*
DD. Lateral edging of pronotum much finer and much less elevated ... Palmerstoni, *Blackb.*
CC. Basal gutter of pronotum not dilated hindward in middle.
D. Clypeal carina angularly elevated in middle.
E. Clypeal carina strongly angulate on either side before reaching margin Sloanei, *Blackb.*
EE. Clypeal carina not angulate laterally ... ... pugnax, *Har.*
DD. Clypeal carina not angularly elevated in middle ... ... pugnacior, *Blackb.*
BB. Retuse front of pronotum not as in "B."
C. Front of clypeus emarginate ... capitosus, *Har.*
CC. Front of clypeus widely and very feebly (or not) sinuous ... ... nodulifer, *Har.*
AA. Retuse front of pronotum very oblique, and descending from *at* (or behind) the middle.
B. Less nitid. Declivous front of pronotum scarcely carinate longitudinally ... declivis, *Har.*
BB. More nitid. Declivous front of pronotum strongly carinate down middle ... desectus, *Macl.*

GROUP III.

A. Dorsal surface devoid of metallic colouring (retuse front of pronotum topped by two subcontiguous protuberances).
B. Pronotum not (or scarcely) punctulate ... macrocephalus, *Kirby.*
BB. Pronotum closely and quite strongly punctulate ... ... capella, *Kirby.*
AA. Dorsal surface green, more or less metallic (retuse front of pronotum topped by four protuberances).
B. Dorsal surface opaque ... ... Bovilli, *Blackb.*
BB. Dorsal surface nitid ... ... conspicuus, *Macl.*

GROUP IV.

A. Eyes not (or scarcely) perceptibly facetted on surface.
B. Retuse front of pronotum topped by strong protuberances ... ... Erichsoni, *Hope.*
BB. Retuse front of pronotum not topped by protuberances.
C. Front of pronotum with a fine median longitudinal carina ... ... Howitti, *Blackb.*

CC. Front of pronotum even.
D. Hind claws large, and at base almost rectangularly bent.
E. Disc of metasternum non-punctulate — Kingi, *Har.*
EE. Disc of metasternum coarsely punctulate ... ... — parvus, *Blanch.*
DD. Claws fairly large, but of normal structure.
E. Disc of metasternum non-punctulate — glabratus, *Hope.*
EE. Disc of metasternum with coarse punctures.
F. Head not bicarinate in either sex.
G. Front of clypeus emarginate ... — Murchisoni, *Blackb.*
GG. Front of clypeus not emarginate ... ... — fitzroyensis, *Blackb.*
FF. Head bicarinate (at any rate in one sex) ... ... — queenslandicus, *Blackb.*
AA. Eyes conspicuously facetted on surface.
B. Eyes comparatively wide.
C. Retuse front of pronotum topped by a strong carinate protuberance ... — picipennis, *Hope.*
CC. Retuse front of pronotum protuberant, but not carinate ... ... — bicornis, *Macl.*
BB. Eyes much narrower.
C. Pygidium not clothed with long or close white or silvery pubescence.
D. Sides of pronotum decidedly (or strongly) sinuate behind middle.
E. Upper surface more or less metallic (if only slightly, then densely opaque).
F. Sides of pronotum not sinuate in front of middle.
G. Pronotum subnitid, quite strongly punctulate ... ... — australis, *Guèr.*
GG. Pronotum opaque, its puncturation very faint.
H. Crenulations of elytra distinctly punctiform ... — anisocerus, *Er.*
HH. Crenulations of elytra not punctiform ... ... — fuliginosus, *Er.*
FF. Sides of pronotum strongly sinuate in front of middle ... — tweedensis, *Blackb.*
EE. Black, not at all metallic ... — Mastersi, *Macl.*
DD. Sides of pronotum non-sinuate behind middle ... ... — pexatus, *Har.*
CC. Pygidium clothed with long (or at least dense) whitish or silvery pilosity.
D. The dorsal surface (except pygidium) glabrous or nearly so.
E. Neither pronotum nor elytra bicolorous.
F. Punctures of elytral striæ large and coarse ... ... — cuniculus, *Macl.*
FF. Punctures of elytral striæ fine.
G. Clypeal carina strongly angulate on either side ... — auritus, *Er.*

GG. Clypeal carina not or scarcely angulate at sides (at any rate in male) ... ... Walteri, *Macl.*
EE. Both pronotum and elytra bicolorous ... . rufosignatus, *Macl.*
DD. Dorsal surface clothed with dense erect pilosity ... ... granulatus, *Bohem.*

GROUP V.

A. Eyes comparatively wide scarcely visibly facetted on their surface.
B. Elytra clothed with conspicuous erect setæ (size moderate; Long., 4 l.) ... ... Macleayi, *Blackb.*
BB. Elytra glabrous (size very small).
C. Elytral interstices convex, closely and conspicuously punctulate ... .. Helmsi, *Blackb.*
CC. Elytral interstices flat, very sparsely and inconspicuously punctulate ... Koebelei, *Blackb.*
AA. Eyes narrow, conspicuously facetted.
B. Elytra clothed with long conspicuous pilosity ... ... aureo viridanus, *Blackb.*
BB. Elytra not clothed with long pilosity.
C. Pronotum very coarsely and closely rugulose (size large, Long. 5 l. or more) rugosus, *Kirby.*
CC. Pronotum finely and confluently asperate.
D. Elytra tuberculate ... ... Haagi, *Har.*
DD. Elytra not tuberculate ... ... Adelaidæ, *Hope.*
CCC. Pronotum conspicuously and not confluently punctulate.
D. Basal joint of hind tarsi strongly compressed, and strongly crenulate on margin ... . consentaneus, *Har.*
DD. Basal joint of hind tarsi normal.
E. Eyes notably less narrow than in the species under "EE."
F. Pronotum evenly convex in hind part ... ... mutatus, *Har.*
FF. Pronotum distinctly sulcate longitudinally in hind part.
G. Sides of prothorax very distinctly sinuate behind middle.
H. Basal edging of pronotum strong and thick ... victoriensis, *Blackb.*
HH. Basal edging of pronotum much finer .. ... Tamworthi, *Blackb.*
GG. Sides of pronotum scarcely sinuate behind middle ... Frenchi, *Blackb.*
EE. Eyes extremely narrow, sublinear.
F. Pronotum more or less strongly sulcate longitudinally in hind part.
G. Puncturation of pronotum extremely coarse (and the general surface nitid) in both sexes ... henleyensis, *Blackb.*
GG. Puncturation of pronotum evidently less coarse (in both sexes).

H. Long pilosity on front part of dorsal surface of pronotum in both sexes ... ... jubatus, *Har.*
HH. Pronotum non-pilose.
I. General surface opaque, pronotum extremely closely punctulate (in both sexes) nanus, *Waterh*
II. General surface nitid, pronotum not closely punctulate (at least in one sex) pontilis, *Blackb.*
FF. Pronotum without any trace of longitudinal sulcus.
G. Antennal club obscure.
H. Puncturation of elytral interstices (especially near suture) fine and sparse,—at least in male ... ... Zietzi, *Blackb.*
HH. Puncturation of elytral interstices (and of the striæ) very much coarser ... nitidior, *Blackb.*
GG, Antennal club yellow ... blackwoodensis, *Blackb.*

GROUP VI.

A. Eyes wide, their surface not (or but little) perceptibly facetted.
B. Dorsal surface clothed with pilosity ... latro, *Har.*
BB. Dorsal surface not pilose.
C. Surface of eyes very nitid, not perceptibly facetted.
D. Claws moderate, normally arched ... pronus, *Er.*
DD. Claws large, bent almost rectangularly at base.
E. Disc of metasternum impressed with coarse punctures.
F. Greatest width of prothorax (viewed from above) considerably in front of middle ... ... submuticus, *Blackb.*
FF. Greatest width of pronotum (viewed from above) at middle inermis, *Macl.**
EE. Disc of metasternum devoid of course punctures ... ... muticus, *Macl.*
CC. Surface of elytra much less nitid,—evidently facetted ... ... Comperei, *Blackb.*
AA. Eyes narrow, their surface conspicuously facetted (quite granulate).
B. Dorsal surface setose or pilose.
C. The elytral interstices equal (or nearly so) *inter se.*
D. Elytral striæ shallowly sulciform (as wide as the interstices) .. ... geelongensis, *Blackb.*
DD. Elytral striæ narrow (very much narrower than the interstices).
E. Dorsal surface metallic... ... margaretensis, *Blackb.*
EE. Dorsal surface non-metallic ... Fletcheri, *Blackb.*

---

* The single specimen before me that I take to be this insect has lost its claws, but it is so evidently close to *muticus*, Macl., &c., that I have no doubt its claws are like those of *muticus.*

CC. Alternate elytral interstices strongly elevated ... ... asper, *Macl.*

BB. Dorsal surface not setose nor pilose.

C. Elytra opaque and densely coriaceous, with flat almost punctureless interstices posticus, *Er.*

CC. Elytra not as in *posticus*, Er.

D. Neither pronotum nor elytra bicolorous.

E. Pronotum not confluently punctulate.

F. Punctures of elytral striæ well defined, not confused with those of the interstices (which are much finer).

G. Pronotum with an evident longitudinal sulcus in hind part.

H. Front part of pronotum rugulose. Size moderate, more than 4 l. long ... .. Dunningi, *Har.*

HH. Front part of pronotum not rugulose. Size small, less than 3 l. long ... Dumbrelli, *Blackb.*

GG. Pronotum evenly convex across hind part ... sydneyensis, *Blackb.*

FF. Punctures of elytral striæ much confused with coarse interstitial puncturation ... ... negatorius, *Blackb.*

EE. Pronotum confluently and asperately punctulate ... ... subocelliger, *Blackb.*

DD. Pronotum unicolorous, elytra bicolorous.

E. Elytra opaque ... ... rubrimaculatus, *Macl.*

EE. Elytra nitid.

F. Elytral interstices finely punctulate ... ... quadripustulatus, *Fab.*

FF. Elytral interstices coarsely punctulate ... ... bipustulatus, *Fab.*

DDD. Both pronotum and elytra bicolorous ... ... cruciger, *Macl.*

O. Cowleyi, sp. nov. Latus; robustus; supra glaber; subtus fulvo-hirtus; subnitidus; ferrugineus vel piceus, antennarum clava rufo-testacea; clypeo transversim rugato; sutura clypeali carinata; carina frontali ut lamina erecta utrinque leviter vel vix sursum producta; oculis convexis, vix manifeste granulatis, latis (horum latitudine quam antennarum clavæ vix minori); prothorace quam longiori ut 18 ad 11 latiori, supra antice retuso, parte retusa lævi vel potius obsolete punctulata, cetera parte grosse fortiter rugulosa postice longitudinaliter impressa, parte dorsali media antice carina forti transversa arcuata integra marginata tuberculo sat magno conico utrinque pone oculum supra partem retusam sito, fovea magna laterali fortiter impressa, lateribus modice arcuatis antice et postice sat fortiter sinuatis,

angulis anticis sat dentiformibus posticis obtusis, sulco laterali marginali trans basin continuo in medio manifeste subangulatim retrorsum dilatato, carina marginali laterali trans basin minus perspicue continua; elytris leviter crenulato-striatis, crenulis quam striæ vix latioribus, interstitiis subtiliter coriaceis parum convexis leviter (latera versus magis profunde) punctulatis; pygidio coriaceo sat crebre minus profunde punctulato; metasterno coriaceo sat sparsim subgrosse punctulato.

Maris clypeo antice sat producto plus minusve emarginato, lateribus antice sinuatis; tibiis anticis sat elongatis, minus latis, extus sat fortiter 4-dentatis.

Feminæ clypeo antice vix producto subtruncato, lateribus antice haud sinuatis; tibiis anticis minus elongatis magis fortiter 4-dentatis. Long., 7—8¼ l.; lat., 4—4½ l.

There is very little reliable external difference between the sexes except in the form of the clypeus and the structure of the front tibiæ. In a well developed male the ends of the frontal lamina are produced upward as quite strong teeth; in the female and in some males this upward dilatation is quite slight. Looked at from in front the whole dorsal surface of the head behind the clypeal carina seems to consist of this frontal lamina,—the surface sculpture of which varies considerably (from being strongly to only lightly rugulose) and does not depend on sex. The species which I regard as *O. atrox*, Har., is very close to *O. Cowleyi*, differing from it chiefly by the hinder elevation on its head being in the male a mere tranverse cariniform line, by the transverse carina above the retuse front of the pronotum having its extremities so far from each other that each of them is directly behind the middle of one of the eyes, by the same carina running in the form of two sides of a triangle the apex of which is truncate and slightly emarginate, by the retuse front of the pronotum being pilose and punctulate, by the interstices of the elytra being flatter, more opaque, and less distinctly punctulate, and by the distance between the external tubercles of the pronotum being a little less than the width of the head.

N. Queensland (sent by the late Mr. Cowley).

O. laminatus, Macl. I think I have correctly identified this insect. The sculpture of the front part of the pronotum is very insufficiently described, and there are several species that fit the description in this respect; but in characterising the *puncturation* of the pronotum Sir W. Macleay says "the greater portion of the rest of the prothorax is punctured," and I find one species (and one only) of this group to which those words apply satisfactorily since on its pronotum the coarse rugulosity that occupies the area immediately behind the retuse front becomes rapidly

obsolete hindward and is very faint or altogether wanting on nearly the hinder half of the dorsal surface. Apart from the character just referred to, this insect is very close to *O. Cowleyi*, Blackb. The arched transverse carina of the pronotum is however less strongly arched, with its extremities further from each other; the extremities of the frontal lamina are (in all the examples before me) much more strongly produced upward than in *O. Cowleyi* of same sex; and the front tibiæ of the male are notably more slender and elongate, there being about nine crenulations on the external outline above the uppermost of the large teeth, while in *O. Cowleyi* there are only six or seven. The distance between the external tubercles of the pronotum is less than the width of the head.

O. quinque tuberculatus, Macl. Some years ago while staying in Sydney I inspected the type of this insect, and made a note against it in my Catalogue "? = *atrox*, Har." I do not attach much importance to this note inasmuch as it was probably not founded on comparison with, but only on memory of, *atrox*; nevertheless I have little doubt from the description of *5-tuberculatus* that it is identical with the insect that I believe to be *atrox*, because that is the only *Onthophagus* (of this Group) known to me as inhabiting Eastern Australia the structure of whose pronotum would be likely to suggest the name *5-tuberculatus* and because the description contains no mention of any other character inconsistent with identity, unless it be the expression "finely punctulate" applied to the insect in general, which does not suit *atrox* except in respect of the elytra. It must be noted however that Macleay is extremely vague in describing the puncturation of the different parts of his *Onthophagi*, not always referring to it at all and in other instances only using the word "punctulate." At any rate if *5-tuberculatus* is not *atrox* it is a species I have not seen, and I have examined a large number of *Onthophagi* from Queensland (its habitat).

O. atrox, Har. From the above notes (on the preceding species) the *Onthophagus* that I have called by this name will be easily identified. It is the only one of this group known to me having the retuse front of its pronotum pilose If my identification is incorrect it can easily be corrected by anyone who can examine the type of *atrox*. It can be regarded as having 5 tubercles placed in a transverse line along the summit of the retuse front of the pronotum, inasmuch as each extremity of the tranverse carina is slightly prominent in most examples and the middle of the carina by a little stretch of imagination may be counted as a somewhat bifid tubercle. The external tubercle on either side is well defined. The interstices of the elytra are

very flat opaque and very finely punctulate, especially those near the suture. The frontal carina is very feeble in the male and not elevated into a tooth or horn (at most only angular) at its extremities in either sex. The distance between the external tubercles of the pronotum is a little greater than the width of the head.

O. Palmerstoni, sp. nov. Sat brevis, lateribus sat rotundatis; supra glaber; subtus fulvo-hirtus; modice nitidus; obscure rufus, antennis dilutioribus; capite fere ut *O. Cowleyi*, sed lamina frontali ad latera nullo mode elevata et oculis nonnihil angustioribus; prothorace fere ut *O. Cowleyi* sed supra minus crebre ruguloso (basin versus haud ruguloso sed concinne subsparsim minus profunde punctulato), parte subbasali ipsa anguste lævi opaca, angulis posticis magis definitis; elytris subtiliter crenulato-striatis, striis subnitidis, crenulis quam striæ nullo modo latioribus, interstitiis planis (latera versus leviter convexis) opacis coriaceis vix manifeste punctulatis; pygidio coriaceo, leviter sparsim punctulato; metasterno coriaceo sat sparsim modice punctulato Maris (?) clypeo antice minus producto subemarginatim truncato, lateribus antice vix sinuatis; tibiis anticis modice elongatis, minus latis, extus sat fortiter 4-dentatis. Long., $5\frac{3}{4}$ l.; lat., $3\frac{1}{5}$ l.

The unique specimen before me of this insect has front tibiæ scarcely so long and narrow as those of the male of *O. Cowleyi* but much more so than those of the female of that species; I think therefore that it is a male. There are about 7 crenulations on the edge of the front tibiæ above the uppermost of the large teeth. The most satisfactory characters for distinguishing it from the other *Onthophagi* of this group seem to be the puncturation of the pronotum and the surface sculpture of the elytra. The former does not (as it does in *O. laminatus*, Macl.) become faint and scarcely impressed behind the middle, but changes from being (in the middle of the dorsal surface) close and rugulose vermiculate sculpture to become behind the middle isolated deeply impressed sparse strong non-rugulose punctures. The distance between the external tubercles of the pronotum is less than the width of the head. The elytral striæ are exceptionally fine and the dorsal interstices absolutely flat and as opaque as those of the species referred to above as *O. atrox*, Har.,—so that (as in the latter) the striæ appear nitid in contrast. The pronotum is more nitid than in any other *Onthophagus* known to me (of this group) except *laminatus*, Macl. The absence of upward projection at the ends of the frontal lamina distinguishes this insect from *laminatus* and *Cowleyi* of both sexes but the degree of upward projection in those species varies too much to justify

laying much emphasis on this character on the strength of a single specimen. Viewed from in front the frontal lamina looks to be a nitid almost punctureless quadrate plate sloping hindward and upward from the clypeal carina (which forms its base) and having all its sides sharply defined right lines or nearly so (which is the case also with specimens of *O. Cowleyi* having a feebly developed lamina but no other known to me of the group) Viewed from behind the frontal lamina looks like that of the female of the Brisbane species which I take to be *O. pugnax*, Har. *(vide infra)* while in *O. Cowleyi* the corresponding lamina looks quite different owing to the upward projection being (in all specimens examined) quite conspicuous. This is the smallest *Onthophagus* I have seen of this group.

N. Australia (Palmerston).

O. Sloanei, sp. nov. Latus; robustus; supra glaber; subtus fulvo-hirtus; opacus (pronoto capiteque leviter subnitido); ater, antennis rufo-testaceis; capite minus lato, ante oculos parum dilatato; clypeo transversim rugato antice angulatim emarginato; capitis parte inter carinas crebre fortiter punctulata, sutura clypeali carinata in medio leviter angulatim elevata; oculis ut *O. Cowleyi*, Blackb.; prothorace quam longiori ut 11 ad 7 latiori, supra antice retuso, parte retusa sat manifeste sat crebre punctulata, cetera parte grosse fortiter rugulosa postice longitudinaliter vix impressa, parte dorsali media antice carina transversa arcuata (hac in medio profunde sinuata et utrinque tuberculo parvo terminata) marginata, tuberculo sat magno conico utrinque sito, fovea magna laterali fortiter impressa, lateribus angulisque ut *O. Cowleyi*, sulco laterali marginali trans basin continuo in medio subangulato sed vix dilatato, carina marginali laterali trans basin sat fortiter continua; elytris obsolete (latera versus minus obsolete) crenulato-striatis, crenulis quam striæ haud latioribus, interstitiis planis (lateralibus leviter convexis) coriaceis (humeris nitidis haud coriaceis) sparsim subtilissime (latera versus magis fortiter) punctulatis; pygidio coriaceo et metasterno sat fortiter punctulatis.

Maris carina frontali quam clypealis vix magis elevata; tibiis anticis sat elongatis, minus latis extus sat fortiter 4-dentatis.

Feminæ carina frontali sat elevata, utrinque sursum producta; tibiis anticis minus elongatis, magis latis, extus magis fortiter 4-dentatis. Long., 7—7$\frac{3}{4}$ l.; lat., 4—4$\frac{1}{5}$ l.

To a casual glance extremely like the species called *O. atrox*, Har. (above), but differing from it (independently of sexual characters) by the clypeus strongly emarginate in both sexes, the glabrous retuse front of the pronotum, the narrower head (very

little expanded in front of the eyes) and the base of the pronotum with its marginal furrow rather narrow and not dilated and flattened in the middle, and its marginal raised edging much stronger. The distance between the external tubercles of the pronotum is much greater than the width of the head. I have named this species after Mr. T. G. Sloane, who is doing such admirable work on the Australian *Carabidæ*.

N.W. Australia.

O. pugnax, Har. Judged by the description this species must be very close to *O. atrox*, Har., although its author does not refer to the other in the description of either. I have examples of an *Onthophagus* from Brisbane (the habitat cited by Harold) which I think must be *pugnax*, and they are extremely close to the species that I have (above) called *atrox*. They are of shorter and broader build and are not so opaque; the retuse front of their pronotum is not pilose and the structure of the base of their pronotum is as in *O. Sloanei*, from which species they differ *inter alia* in the front of their clypeus not being emarginate. The distance between the external tubercles of their pronotum is greater than the width of the head. The differences between *pugnax* and *atrox* in respect of the sexual characters of the head appear to be chiefly in degree rather than kind, and I cannot attach very much importance to them.

O. pugnacior, sp. nov. (mas). *O. Sloanei*, Blackb., maris affinis; differt capite pronotoque paullo minus nitidis; illo latiori, ante oculos sat fortiter dilatato; clypeo brevi latissimo antice rotundato; carina clypeali subobsoleta, in parte mediana nullo modo elevata, carina frontali antrorsum fortiter arcuata; pronoti parte retusa subobsolete punctulata, dorso minus fortiter ruguloso, carina arcuata transversa leviter tantum sinuata nullo modo tuberculata; elytrorum humeris coriaceis haud nitidis; metasterno (lateribus exceptis) multo minus fortiter punctulato. Long., 7¾ l.; lat., 4 l.

This species is so closely allied to *O. Sloanei*, that it seems useless to repeat the diagnosis at full length; the diagnosis applies exactly to this species except in so far as specified above. The extreme feebleness of the clypeal carina makes the frontal carina (without being absolutely more elevated than in *Sloanei*) much more elevated in comparison with the former. The external teeth of the front tibæ are much more feeble in my example of *pugnacior* than in *Sloanei*, but I doubt whether this is a constant character. The structure of the basal margin of the pronotum readily distinguishes *pugnacior* from all the other species known to me of this group except *Sloanei* and the species mentioned above as *pugnax*, Har. It is even closer to the latter than to *Sloanei*, from which it differs in all the respects mentioned above

as distinctions from *Sloanei* except the form of the front margin of the clypeus, and the structure of the transverse carina of the pronotum, in which it resembles *pugnax*. The frontal carina viewed from behind is an elevated line forming a regular strong curve with its convexity forward, while in *pugnax* and *Sloanei* it is sinuous with its median part widely and feebly curved in the opposite direction. The clypeus is much shorter and wider than in any other species known to me of this group. The distance between the external tubercles of the pronotum is a little greater than the width of the head.

N. Queensland.

O. Bovilli, sp. nov. Sat latus, supra glaber; subtus fulvo-hirtus; sat opacus coriaceus; obscure viridis (corpore subtus et pygidio nigricantibus, elytris piceis parum viridescentibus), tarsis palpis antennisque ferrugineis (harum clava testacea); capite modice lato; clypeo transversim rugato antice truncato, sutura clypeali carinata; lamina frontali modice elevata, ad angulos vix prominenti; capite inter carinas ruguloso; oculis sat angustis, manifeste granulatis, prothorace quam longiori ut 18 ad 11 latiori, supra antice breviter retuso, parte retusa sat obsolete punctulata, cetera parte grosse crebre rugulosa postice longitudinaliter obsolete sulcata, parte dorsali media anguste antrorsum prominenti (et subcarinato-marginata) in medio emarginata, tuberculo sat magno utrinque sito, angulis anticis subdentiformibus posticis rotundato-obtusis, fovea laterali fortiter impressa, lateribus ante medium leviter (pone medium modice) sinuatis, sulco laterali marginali trans basin continuo haud in medio dilatato, carina marginali trans basin continua, basi leviter trisinuata; elytris leviter crenulato-striatis, crenulis quam striæ haud latioribus, interstitiis subconvexis crebrius sat obsolete punctulatis, humeris nitidis haud coriaceis; pygidio metasternoque obsolete punctulatis; tibiis anticis sat brevibus; unguiculis modicis. Long., $4\frac{1}{2}$ l.; lat., $2\frac{3}{5}$ l.

Very distinct from all the species of the *laminatus* group (with which group it agrees superficially and in most characters) by its conspicuously granulate and much narrower eyes. These resemble the eyes of *O. conspicuus*, Macleay, which is a very much more nitid and brilliantly metallic insect, with the pronotum in both sexes much less closely and rugulosely punctured, and with the punctures of the elytral interstices very much finer (indeed almost wanting). The type is in the S. Australian Museum. It is probably a female. Named after the late Dr. Bovill.

Northern Territory of S. Australia.

O. desectus, Macl. I agree with Mr. C. O. Waterhouse, Ann.

N.H. (VI.) XIV., that Harold was probably mistaken in regarding this species as a synonym of *declivis*, Har. I have before me a Queensland specimen which I compared some years ago with the type of *desectus* and found to be identical. It is, I think, certainly distinct from *declivis* from which (of same sex, female) it differs by its considerably more nitid surface, the quite strong emargination of the middle of the frontal carina, the much more conspicuous longitudinal carina occupying the middle of the retuse portion of the pronotum, and the much larger and deeper punctures of the metasternum. It would be interesting to know what species it was that Sir W. Macleay regarded as *declivis*, Har., in 1888, when he reported that species as occurring in N.W. Australia. If he considered it as identical with *desectus* (i.e., if by *declivis* he meant *desectus*) then in all probability the insect from N.W. Australia that he described (Proc. L.S., 1888, p. 899) under the name *devexus* as "very like *O. declivis*, but of a much coarser and rougher sculpture" was the true *declivis*. The remainder of the description fits *O. declivis*, Har., very well except in the mention of the frontal carina being "very minutely emarginate in the middle." I have not seen any example of *declivis* of either sex having that carina emarginate, but there is certainly sufficient tendency to variation in the frontal structure of the *Onthophagi* to render it very inexpedient to found a species upon slight differences in that character alone.

O. *Schmeltzi*, Har. I have no doubt but what this is a variety of *O. capella*, Kirby. There is absolutely nothing in its author's description and remarks to differentiate it from *capella* except the form of the frontal lamina in the male, and even that is a mere difference in the shape of the outline of the portion connecting the erect extremities.

O. macrocephalus, Kirby. Sat latus; supra glaber; subtus fulvo-hirtus; minus nitidus; niger, antennis ferrugineis, clava testacea; clypeo transversim rugato; sutura clypeali sat fortiter carinata; carina frontali sat alta; capite inter carinas nitido obsolete punctulato; oculis convexis manifeste granulatis, sat angustis (horum latitudine quam antennarum clavæ fere duplo minori); prothorace quam longiori ut 18 ad 11 latiori, supra antice retuso, fere lævi vel potius obsoletissime (latera versus paullo magis perspicue) punctulato, parte dorsali media antice tuberculis 2 (ut *O. capellæ*, Kirby) instructis, tuberculis inter hos et margines laterales nullis, fovea magna laterali fortiter impressa, lateribus fortiter arcuatis postice fortiter sinuatis, angulis anticis (ut *O. capellæ*) subobtusis posticis valde obtusis, sulco marginali laterali trans basin continuo in medio vix dilatato, carina marginali trans basin continua (prope angulos sat obsoleta,

in medio sat forti); elytris leviter crenulato-striatis, crenulis quam striæ haud latioribus, interstitiis sat convexis coriaceis suturam versus obsolete (latera versus magis perspicue) punctulatis; pygidio coriaceo leviter minus crebre punctulato.

Maris clypeo antice sat producto-acuminato et reflexo, lamina frontali pervariabili (vel paullo supra oculos truncata, vel plus minusve sursum producta et acuminata).

Feminæ clypeo antice sat late rotundato parum reflexo; lamina frontali minus elevata utrinque plus minusve sursum acuminata. Long., $6\frac{1}{2}$—$7\frac{1}{2}$ l.; lat., $3\frac{2}{5}$—$4\frac{1}{5}$ l.

It has seemed to me desirable to redescribe this species, as the original diagnosis is very brief and applies only to one sex. The development of the male characters varies to an extraordinary extent (from the form described by Kirby, down to a form in which the frontal elevation is merely a widely truncate feeble carina not much different from that of the female of *O. capella*). I have not, however, seen a male in which there is any upward projection of the *ends* of the frontal lamina,—this form being apparently distinctive of the female (though in some females exceedingly slight). The subacuminately produced, and somewhat strongly reflexed, clypeus of the male seems to be the most satisfactory distinction of that sex. I cannot satisfy myself that there is any workable distinction between the front tibiæ of the sexes. The tubercles at the summit of the middle of the retuse front of the pronotum vary in size inversely with the size of the frontal lamina,—so that those tubercles are at their maximum in the female and at their minimum in a highly developed male. As a species this *Onthophagus* is very distinct, its only near ally known to me being *O. capella*, Kirby, which has a strongly punctulate pronotum, elytral interstices almost absolutely flat, &c.

N.S. Wales.

O. capella, Kirby. I have found a specimen which evidently appertains to this species (it is not even a variety) among some *Coleoptera* sent to me from Cape York by the late Mr. Cowley.

O. capitosus, Har. A single (female) example from Cape York in my collection seems to be this species, although if so it is a colour variety, the head and prothorax being piceous, the elytra and pygidium clear ferruginous. It has the short clypeal carina attributed to *capitosus*, and the front of the clypeus emarginate as described. The front of the pronotum is only very slightly retuse. This is a very isolated species; the base of its pronotum is as in *O. capella*, Kirby, but it differs from *capella* and the rest of its group by, *inter alia*, its eyes not distinctly granulate (as in *declivis*, Har.).

O. picipennis, Hope. I am fairly confident that I know this

species, but only because I have before me some examples from the neighbourhood (Port Essington) that Hope cites as its habitat. The description is quite insufficient, and the name absurd,—as the author himself in his diagnosis says "elytris nigris." The phrase "thorace trigono" is very puzzling; I do not know of any *Onthophagus* that it would suit; following words describing the structure of the summit of the retuse front forbid the supposition that the phrase refers to that part having three angular projections. I have concluded that the reference must be to the strong dilatation of the prothorax near the front, making the front itself appear (when looked at casually, from behind, obliquely) very much wider than the base, so that with a little imagination the segment seems to have a certain resemblance to a triangle with the apex truncate. One of the specimens before me happened to be mounted in such a manner that this similarity is certainly traceable. The only other explanation I can suggest is that "thorace" may stand in error for "clypeo." "Capite ante oculos furcato" I take to refer to the hornlike upward prolongment of the ends of the frontal lamina. The species before me varies in colour from reddish piceous to black and is nitid (the club of the antennæ testaceous); the base of its pronotum is not strictly speaking margined, but a narrow marginal space is flattened, and not continuing evenly the hind declivity of the surface may be called a narrow pseudo-margin. The clypeal suture forms a carina abbreviated at each end; the frontal lamina is well-marked and its ends are elevated very variably; the clypeus is acuminate in front, with sinuous sides and reflexed apex; the eyes resemble those of *O. capella*, Kirby (fairly wide, and distinctly facetted); the pronotum is rather closely and not finely (but not deeply) punctulate (the punctures very sparse and faint on the retuse front and also near the base); the middle of the retuse front is topped by a strong widely and sinuously arched transverse carina; the sides of the pronotum are extremely strongly sinuate behind the middle but (viewed from above) non-sinuate in front of the middle; the front angles are roundly (but not widely) obtuse, the hind angles well defined and widely obtuse; the elytra are somewhat strongly crenulate-striate, the crenulations inclining towards being punctures; the elytral interstices are more or less convex (especially towards the sides) and evenly sparsely and not very finely punctulate; the pygidium is coriaceous and somewhat coarsely punctulate; the metasternum is finely sparsely and not deeply punctulate. If (as I believe to be the case) I have both sexes before me, the sexual differences are very feeble, the female having the clypeus less acuminate in front, the ends of the frontal lamina less produced and the retuse front of the pronotum less elevated and more distinctly punctulate.

An example from Cape York is very near to this species but differs in the transverse carina of the pronotum being evenly arched. I believe it to be a good species, but more specimens ought to be examined before it is described; it does not appear to have been described unless it should prove to be a variety of *picipennis*, Hope.

O. Erichsoni, Hope. Specimens that I have no doubt represent this species were sent to me from the Port Essington region by the late Dr. Bovill and there are other examples (from the same place) in the S. Australian Museum. In Masters' Catalogue *O. inermis*, Macl., is sunk as a synonym of this insect, but that seems to be clearly an error. The specimens before me belong to the same group of *Onthophagi* as those referred to above under the name *O. picipennis*, having a narrow flattened space forming a pseudo-margin at the base of the pronotum. It seems desirable to supplement Hope's brief description with the following particulars:—Clypeus rather strongly and narrowly produced and acuminate in the male (evenly rounded or nearly so, in female); puncturation of head none or very faint in male (in female transversely rugose on clypeus, feeble to strong elsewhere); eyes fairly wide, their surface smooth non-granulate (though in some examples underlying facets are visible through the smooth surface); clypeal suture carinate, entire; frontal carina very feeble in male, its ends more developed and—from some points of view—tuberculiform (in female better developed, with a somewhat quadrate projection in the middle); pronotum faintly (or scarcely) punctulate, a strong longitudinal sulcus on hind part, retuse in front, retuse front topped in male by a broad flattened anteriorly emarginate process which projects forward and slightly upward (in the female this is much smaller and almost divided into two, and there is a small tubercle at the external limit of the retuse front), sides strongly sinuate both in front of and behind the middle, front angles subacute, hind angles roundly obtuse; elytra strongly crenulate-striate, the crenulations tending to be punctures, interstices more or less convex and faintly but somewhat closely and not finely punctulate; pygidium with strong sparse punctures mixed with much finer ones; metasternum with strong punctures on the sides and hinder part; front tibiæ of male very evidently longer than of female and having a pencil of golden hairs at their inner apex (Long., $4\frac{1}{4}$—$4\frac{1}{2}$ l.).

O. Howitti, sp. nov. Latus; supra glaber; subtus fulvo-hirtus; sat nitidus; niger, tarsis palpis antennisque plus minusve ferrugineis (harum clava testacea); clypeo fortissime transversim rugato, antice haud vel vix sinuato; sutura clypeali fortiter carinata; carina frontali leviter elevata; capite inter carinas fortiter rugulose punctulato; oculis sat latis vix

manifeste granulatis; prothorace quam longiori ut 16 ad 11 latiori, antice leviter (maris?) vel vix (feminæ?) oblique retuso, antice crebre subrugulose vix fortiter (in cetera parte minus crebre nec rugulose, retrorsum gradatim magis obsolete) punctulato, antice longitudinaliter subtiliter carinato, postice longitudinaliter leviter canaliculato, foveis sublateralibus profundis, lateribus ante medium vix perspicue (pone medium fortiter) sinuatis, angulis anticis sat acutis (nullo modo dentiformibus) posticis obtusis bene definitis, basi anguste planata; elytris crenulatostriatis, crenulis leviter impressis subpunctiformibus, interstitiis sat planis vix perspicue punctulatis; pygidio crebrius subtilius punctulato; metasterno lævi (lateribus et parte antica sat grosse exceptis) punctulato; tibiis anticis sat brevibus.

Maris (?) carina frontali sat fortiter sinuata; elytris magis nitidis.

Feminæ (?) carina frontali fere recta; elytris minus nitidis, subtilissime coriaceis. Long., 5—5½ l.; lat., 3⅕—3½ l.

I believe my two specimens of this insect to be male and female, but the differences are not so strongly marked as not to be possibly variations of development in one sex; there is no decided distinction in the front tibiæ. The species superficially resembles the female of the *Onthophagus* mentioned above as *O. desectus*, Macl., but differs from it by its very evidently wider and shorter form, by its much more nitid surface (the specimen that I regard as a male has quite brilliantly nitid elytra and the female is not very much less nitid), by its pronotum much less retuse in front without anything like a tubercle at the top of the retuse part, by the absence of a turned-up edge at the base of the pronotum, by the very much less strong and close puncturation (which moreover is non-rugulose) of the hinder part of the pronotum, &c. In the specimen which I regard as the female of *O. Howitti* the hind one-third of the pronotum is all but non-punctulate.

Northern Territory of S. Australia.

O. Zietzi, sp. nov. Mas. Latus; supra glaber; subtus sparsim fulvo-hirtus; nitidus; niger, tarsis et antennarum basi picescentibus; clypeo crebre fortiter punctulato, antice emarginato; sutura clypeali fortiter carinata; carina frontali fortiter elevata, supra fortiter arcuatim emarginata; capite inter carinas sat grosse punctulato; oculis angustissimis minus subtiliter granulatis; prothorace quam longiori ut 18 ad 11 latiori, antice breviter retuso, sparsius minus fortiter punctulato, lateribus ante medium haud (pone medium parum perspicue) sinuatis, foveis sublateralibus bene definitis, angulis anticis

leviter obtusis parum productis posticis rotundato-obtusis, basi subtilissime elevato-marginata; elytris crenulato-striatis, crenulis punctiformibus quam striæ sat latioribus, interstiis fere planis sparsim subtilius (latera versus magis fortiter magis crebre) punctulatis; pygidio sparsim subtilius punctulato; metasterno fere lævi (parte antica lateribusque sat grosse punctulatis exceptis); tibiis anticis fortiter elongatis; unguiculis sat parvis. Long., 2 l.; lat., $1\frac{2}{5}$ l.

Very close to *O. nitidior*, Blackb., but seems to be certainly a distinct species. It is without the slight coppery tone of that insect. Its pronotum is scarcely margined at the base (in *nitidior* distinctly), the punctiform crenulations of its elytral striæ are considerably smaller, its elytral interstices are nearly flat and (especially those near the suture) are quite finely (in *nitidior* coarsely) punctulate, and its pygidium is very much more finely punctured. A single example (taken by Mr. Zietz) is in the S. Australian Museum.

Central Australia (Lake Callabonna).

O. bicornis, Macl. I have specimens from the Northern Territory evidently appertaining to this species. They are closely allied to those mentioned above as *O. Erichsoni*, Hope, but are much smaller (Long., 3—$3\frac{1}{2}$ l.). The frontal lamina in the female is straight and entire (without projections at ends or middle), in the male represented by two short isolated horns; the median projection topping the retuse front of the pronotum in the male is much like that of *O. Erichsoni*, and there is a conic tubercle on either side at the external limit of the retuse front (in the female the middle projection becomes a scarcely prominent and scarcely emarginate gibbosity and there is no external tubercle); the sides of the prothorax are not sinuate in front of the middle; the front angles of the prothorax are obtuse and the hind angles very well defined (not far from being *right* angles); the eyes are quite distinctly granulate.

O. glabratus, Hope. There are several Australian *Onthophagi* that the few words in which this species is described would fit very fairly well. One of them is a species that was sent to me by the late Dr. Bovill from the Port Essington neighbourhood, and therefore I have little doubt of its being the true *glabratus*. The following indication of characters will enable it to be identified: — Long, $4\frac{1}{2}$ l.—$5\frac{1}{2}$ l.; color uniform, varying from red-brown to black, tarsi palpi and antennæ lighter (especially the antennal club, which is somewhat testaceous); upper surface glabrous coriaceous subopaque; head without any transverse carinæ, its surface to about the level of the eyes transversely wrinkled, hinder part scarcely punctulate; pronotum faintly sparsely and excessively finely punctulate, without inequalities

except the sublateral fovea on either side, its base with a very narrow pseudo-margin (as indicated above under *picipennis*, Hope), the sides not sinuate in front of the middle and not strongly sinuate behind the middle; the eyes nitid and smooth (but with underlying granulation visible in some examples); elytra very finely crenulate-striate, striæ somewhat nitid, crenulations very feeble and not wider than the striæ, interstices flat (or nearly so) scarcely punctulate, pygidium and metasternum scarcely punctulate; front of clypeus just perceptibly sinuous in the middle; no sexual distinctions observed (although numerous specimens examined) except that in some examples the front tibiæ are more slender than in others. The only discrepancy with Hope's description is in the colour of the antennal club. Hope calls the antennæ of the type "piceous" in distinction from the general black colour. In reality the club of the antennæ is dull testaceous, but in several specimens before me (and probably it was the case with the type) the club is dirty and looks darker than it really is.

O. australis, Guér. I am doubtful as to whether the common *Onthophagus* that usually bears this name in collections is really this almost undescribed insect. The original description is practically unintelligible unless assisted by comparison with the Indian *O. dama*, Fab., but as its author expressly states that its elytra are black and the elytra of the *Onthophagus* I refer to are always more or less green or coppery, there certainly seems to be a doubt about the identification. Harold published a note in 1867 claiming the name for the common *Onthophagus* to which it is usually attributed, but he gives no reason for his determination, which could not possibly be decisive of the matter unless it was founded on comparison with the type. As, however, I have no means of ascertaining whether the type is still in existence, I accept Harold's identification; though it is to be noted that Guérin says of *australis* "thorace mutico" which does not apply (as Harold himself indicates) to the species for which he claims the name.

O. tweedensis, sp. nov. Mas. Sat latus; supra glaber; subtus fulvo-hirtus; minus nitidus; supra subtiliter coriaceus; viridis, elytris nigris vix violaceis, tarsis palpis antennisque ferrugineis (harum clava testacea), clypeo crebre minus fortiter punctulato, antice late reflexo subtruncato; sutura clypeali minus fortiter carinata; lamina frontali sat alta utrinque ut cornu elongatum sat gracile producta (cornubus apicem versus sat fortiter convergentibus; capite pone clypeum sparsius subfortiter punctulato; oculis angustis fortius granulatis; prothorace quam longiori ut 18 add 11 latiori, supra antice retuso, parte retusa lævi in medio anguste

oblique declivi ultra declivitatem mediam (hic subgibboso et hinc fere verticali), cetera parte sparsim subgrosse nec profunde vix rugulose punctulato, foveis lateralibus magnis profundis, lateribus et ante et pone medium fortiter sinuatis, angulis anticis dentiformibus posticis obtusis, basi anguste subplanata; elytris crenulato-striatis, crenulis haud punctiformibus, interstitiis subconvexis sparsim subtiliter punctulatis; pygidio sparsim subfortiter punctulato; metasterno fere lævi (parte antica externa utrinque sat grosse punctulata excepta); tibiis anticis minus elongatis; unguiculis sat parvis. Long., 4 l.; $2\frac{3}{5}$ l.

Allied to *O. australis*, Guér.; and *O. Mastersi*, Macl. Its green coloring is considerably brighter than in the former and in no part is it so decidedly black as the latter, its black coloring even on the elytra having a manifest indigo tone. The very strong sinuation of the sides of its prothorax in the front half distinguish it quite effectually from *australis*; they are slightly sinuate in *Mastersi*, but that species is entirely black on the upper surface and the crenulæ of its elytral striæ are notably punctiform and wider than their striæ. The horns at the ends of the frontal lamina are much less widely separated *inter se* than in any specimen before me of *australis* or *Mastersi* and are almost approximate at their tips. The inequality of the front of the pronotum is also distinctive; viewed from the side the front outline is seen (not to be evenly declivous, but) to run obliquely declivous for a certain distance, then to project forward in a subangular gibbosity and thence to descend almost vertically. In the type specimen there is a deep emargination of the frontal lamina at either end separating the lamina from the horns (as in most examples of *australis* and *Mastersi)* but this is no doubt variable. This species has been given to me by Mr. Lea.

Northern N.S. Wales (Tweed R.).

O. parvus, Blanch. The description given by Blanchard of this species is too brief to be of much use except supplemented by the examination of specimens obtained in the habitat of the type. I have before me a male *Onthophagus* (unfortunately only a single example) from the Far North of W. Australia which agrees very well with Blanchard's description, and as I have observed that the *Onthophagi* of the P. Essington district are largely represented in N.W. Australia). I have seen very few of them from Queensland), there is every probability that the specimen in question is *parvus*. Raffles Bay,—the habitat of *O. parvus* is close to Port Essington. The following notes furnish more exact particulars than Blanchard supplied:—Long., $3\frac{1}{2}$ l. Black, the margins of the clypeus, the antennæ, the palpi and legs red

Upper surface glabrous and very nitid. Head without any transverse carinæ, the clypeal suture just perceptibly elevated; clypeus scarcely sinuate in the middle of the front, its surface somewhat strongly and closely punctulate and evidently transversely wrinkled; the rest of the head punctured not much differently from the clypeus but gradually less closely hindward and with smaller punctures intermingled; the eyes convex, scarcely granulate and not very narrow; pronotum extremely finely and sparsely punctulate, without inequality except the sublateral foveæ, its base with a fairly distinct pseudo-margin, the sides not sinuate in front of the middle (the right side is very slightly so, but I think this is abnormal) and only feebly sinuate behind, front angles moderately produced, hind angles scarcely defined; elytra somewhat strongly crenulate-striate, the crenulations decidedly punctiform and wider than the striæ, interstices decidedly convex and extremely finely punctulate (a little more distinctly towards the lateral margins); pygidium and metasternum strongly punctulate, claws like those of *O. Kingi*, Har. The under-surface is almost glabrous, but this may be due to abrasion. A specimen in the S. Australian Museum examined since the above note was written seems to be the female of this species. It differs from the male chiefly by its strongly cariniform clypeal suture.

O. queenslandicus, sp. nov. Minus latus; supra glaber; subtus sparsissime hirtus; subnitidus, piceus vel niger, antennis palpisque testaceis, tarsis (tibiisque plus minusve) rufescentibus; clypeo sat fortiter subrugulose punctulato et transversim rugato antice rotundato vel vix sinuato, sutura clypeali carinata, carina frontali bene definita antrorsum arcuata; capite inter carinas subgrosse (pone carinam frontalem multo magis subtiliter) punctulato; oculis convexis, minus angustis, vix perspicue granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra æquali (foveis sublateralibus exceptis), subtilius sat crebre (latera versus antice magis crebre) punctulato, lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis subacutis posticis fere nullis, basi angustissime subplanata; elytris sat leviter (nec angustissime) crenulato-striatis, interstitiis leviter vel vix convexis, subtiliter coriaceis leviter subtilissime sparsim (latera versus paullo magis perspicue) punctulatis; pygidio coriaceo sat crebre minus subtiliter punctulato; metasterno nitido subtiliter punctulato.

Maris quam feminæ tibiis anticis longioribus. Long., $3\frac{1}{2}$ l.; lat., $1\frac{9}{10}$ l.

The flattened narrow strip across the base of the pronotum is carcely noticeable except when looked at obliquely from behind,

but from that point of view is very manifest, especially in the middle. The species is very distinct from any other known to me. From those species which it most resembles superficially its strongly bicarinate head in combination with non-metallic surface separate it widely.

N. Queensland (sent by the late Mr. Cowley).

O. fitzroyensis, sp. nov. Mas. Sat latus; supra glaber; subtus sparsissime fulvo-hirtus; minus nitidus, subtiliter coriaceus; piceus vel niger, leviter vel vix ænescens, tarsis palpis antennisque ferrugineis, harum clava testacea; clypeo sat fortiter punctulato, antice rotundato; sutura clypeali leviter carinata, capite pone clypeum sparsius subtilius punctulato et inter oculos bicornuto; oculis sat angustis, leviter convexis, vix manifeste granulatis; prothorace quam longiori ut 17 ad 11 latiori, supra crebrius subtilissime punctulato, antice a medio oblique concavo-retuso, supra partem retusam in medio vix gibbo, utrinque latus versus foveolato, lateribus ante medium haud (pone medium subfortiter) sinuatis; angulis anticis subacutis posticis rotundato-obtusis; basi angustissime subplanata; elytris crenulato-striatis, crenulis vix punctiformibus quam striæ vix latioribus, interstitiis crebrius subobsolete punctulatis: pygidio sparsim obsolete (metasterno sparsim subtiliter, latera versus sparsim grosse) punctulato; pedibus anticis minus elongatis; tarsorum posticorum articulo apicali subtus breviter acuminato-producto, unguiculis sat magnis, fortiter curvatis.

Femina (?) quam mas magis opaca, clypeo antice leviter subsinuato; capite pone clypeum magis crebre punctulato, inermi; pronoto antice vix perspicue retuso, in medio etiam minus gibbo, vix perspicue punctulato; elytris minus fortiter striatis, interstitiis planis. Long., $3\frac{1}{2}$ l.; lat., $2\frac{1}{5}$ l.

The male described above and the insect described doubtfully as its female are in the S. Australian Museum among the relics of the ill-fated Calvert exploring expedition in N.W. Australia. The two were taken at the junction of the Fitzroy and Margaret Rivers, apparently in company. I have no *serious* doubt of their being one species, but it is to be noted that I know no other Australian *Onthophagus* in which the front of the pronotum is strongly retuse in the male and all but absolutely non-retuse in the female. The species is near *O. Kingi*, Har., which, *inter alia*, is considerably larger, is devoid of coarse puncturation on the metasternum, and has much wider eyes. *O. queenslandicus* is another ally, but *inter alia*, its head is quite strongly bicarinate.

N.W. Australia.

O. aureo-viridanus, sp. nov. Sat latus; totus fulvo-pilosus; nitidus; aureo-viridis, elytris corporeque subtus obscuris, palpis tarsisque ferrugineis, antennis piceis; clypeo crebre ruguloso, antice subemarginato; sutura clypeali subobsoleta sed in medio ut cornu breve conicum erecto; carina frontali angulata, leviter elevata, nonnihil cuprea; capite inter clypeum et carinam frontalem sat grosse punctulato; oculis angustis fere subfortiter granulatis; prothorace quam longiori ut 16 ad 11 latiori supra sparsius (ad latera magis crebre) subgrosse punctulato, æquali (foveis lateralibus exceptis), lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis obtusis posticis fere nullis, basi subtiliter elevato-marginata; elytris fortiter striatis, striis latis confuse punctulatis, interstitiis convexis lævibus (sed prope marginem lateralem fortiter) punctulatis; pygidio metasternoque fortiter crebrius punctulatis; unguiculis parvis. Long., $2\frac{4}{5}$ l.; lat., $1\frac{3}{5}$ l.

I have seen four specimens of this iasect and do not observe any sexual distinctions among them except that one of them (no doubt a male) has front tibæ more slender than the others. The species is not near any other Australian *Onthophagus* known to me except *geelongensis*, Blackb., from which it differs *inter alia* by its colour, by its clypeal suture obsolete except in the middle where it becomes a short conical horn; and by its pronotum very evidently more coarsely and less closely punctulate, and edged along its base by a fine raised line which is quite well defined in the middle.

South Australia.

O. Macleayi, sp. nov. Minus latus; supra pilis erectis flavescentibus sparsim vestitus; subtus fulvo-hirtus; subnitidus, elytris pygidioque subtiliter coriaceis; rufo-brunneus, antennarum clava dilutiori; capite æquali, rugulose sat grosse nec crebre punctulato, antice sat fortiter sat anguste reflexo et sat profunde emarginato; oculis minus angustis haud perspicue granulatis; prothorace fere æquali (antice vix retuso et vix bigibbo postice late longitudinaliter vix sulcato) foveis sublateralibus exceptis, sparsius subfortiter (prope angulos anticos sat grosse) punctulato, angulis anticis obtuso-rotundatis posticis sat definitis obtusis, lateribus ante medium haud (pone medium leviter) sinuatis, basi subfortiter elevato-marginata leviter trisinuata; elytris sat fortiter striatis, striis leviter punctulatis, puncturis in striis quam striæ latioribus, insterstitiis convexis nonnihil cariniformibus sparsim leviter fere grosse punctulatis, puncturis in interstitiis piliferis; pygidio metasternoque sat grosse punctulatis

(puncturis in ambobus piliferis); tibiis anticis minus elongatis, unguiculis parvis. Long., 4 l.; lat., $2\frac{1}{4}$ l.

The type of this species (which was generously given to me by Mr. Lea) is probably a male, judged by the narrowed and quite strongly upturned front of its head. The clypeus is evenly continuous with the rest of the head without any trace of a clypeal suture or carina or any change in the puncturation. Probably this species bears a general resemblance to the practically undescribed *O. Thoreyi*, Har., but as the presence of a frontal carina in both sexes is one of the few characters attributed to that species I presume that it is distinct. This insect is also somewhat like superficially to an *Onthophagus* from N. Australia which I have no doubt is *O. latro*, Har., which, however, among many other distinctions has the base of its pronotum unmargined and its eyes quite distinctly granulate. I have named it after the late Sir W. Macleay.

N.S. Wales; Sydney.

O. Helmsi, sp. nov. Mas (?). Sat latus; supra glaber; subtus sparsissime fulvo-hirtus; sat nitidus; niger, tarsis palpis antennisque ferrugineis; clypeo transversim rugato, antice leviter emarginato; sutura clypeali fortiter carinata; capite pone clypeum sat grosse punctulato et inter oculos obtuse bituberculato; oculis minus angustis vix perspicue granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra antice vix perspicue retuso (foveis sublateralibus modicis), crebre minus fortiter punctulato (parte sublaterali media lævi), postice longitudinaliter vix sulcato, lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis fere rectis posticis obtusis, basi subtilissime (nisi in medio vix perspicue) elevato-marginata, elytris punctulato-striatis, puncturis quam striæ sat latioribus, interstitiis convexis crebrius minus subtiliter punctulatis; pygidio crebre sat grosse punctulato; metasterno (media parte lævi excepta) sat grosse punctulato; tibiis anticis modicis; unguiculis minus brevibus. Long. $2\frac{1}{2}$ l.; lat., $1\frac{3}{5}$ l.

I am doubtful of the sex of the unique example of this species (presented to me by Mr. Lea). The two frontal tubercles and the tendency (very slight) to a retuse form on the front of the pronotum are in favour of its being a male, but the front tibiæ do not show any elongation likely to be sexual. It is superficially not unlike *O. nitidior*, Blackb., but *inter alia* has much wider eyes, which are scarcely perceptibly granulate. It also resembles *O. Koebelei*, Blackb. (which has similar eyes) but differs by *inter alia* its convex conspicuously punctulate elytral interstices and

its very much more closely punctulate pygidium which (unless the type is abraded) is non-setose.

N.W. Australia (Kimberley; Mr. Helms).

O. Koebelei, sp. nov. Sat latus; supra glaber subtus fulvo-hirtus; nitidus; niger, clypei margine pedibusque piceis, antennis testaceis, pygidio rufo; clypeo perbrevi, fortiter crebre punctulato, vix transversim rugato, antice vix sinuato, sutura clypeali sat fortiter carinata antrorsum sat fortiter arcuata, carina frontali sat fortiter elevata; capite inter carinas sat fortiter minus crebre (pone carinam frontalem minus fortiter subsparsim) punctulato; oculis sat convexis minus angustis, vix perspicue granulatis; prothorace quam longiori ut 9 ad 5 latiori, supra æquali (foveis sublateralibus subobsoletis exceptis) subtiliter sparsim (latera versus magis fortiter vix magis crebre) punctulato, lateribus (his minus fortiter arcuatis) ante medium haud (pone medium vix) sinuatis, angulis anticis obtusis minus productis posticis late obtusis, basi media subtiliter elevato-marginata; elytris punctulato-striatis, striis sat subtilibus, puncturis quam striæ sat latioribus, interstitiis subplanis subtilissime (prope marginem lateralem fortiter) punctulatis; pygidio sparsim setoso, fortiter sparsius punctulato; metasterno (medio late lævi excepto) grosse punctulato. Long., 2 l.; lat., $1\frac{1}{4}$ l.

I am doubtful of the sex of my unique specimen; the front tibiæ are moderately short and stout, but it is probably a species in which the sexes do not differ much *inter se*. There is a little tendency to rufescence about the base and apex of the elytra which is probably not constant. The basal margin of the pronotum is an extremely fine line scarcely distinct except in the middle, but the pronotum certainly cannot be called unmargined at the base. The very feebly rounded sides of the pronotum furnish a good character.

N. Queensland (Mr. Koebele).

O. pontilis, sp. nov. (Mas. ?) Sat latus; supra glaber; subtus sparsim fulvo-hirtus; nitidus; obscure æneus, pronoto nonnihil aurato, antennis pedibusque ferrugineis, elytris (exempli typici) prope apicem testaceo-variegatis; clypeo perbrevi, fortiter crebre punctulato, transversim rugato, antice sat fortiter emarginato, sutura clypeali sat fortiter carinata antrorsum sat fortiter arcuata, carina frontali nulla sed fronte media tuberculo magno acute conico armata; capite pone carinam clypealem fortiter sat crebre (postice minus crebre) punctulato; oculis angustis vix convexis minus subtiliter granulatis; prothorace quam longiori ut 7 ad 4 latiori, supra fere æquali (foveis sublateralibus et sulco obso-

leto longitudinali brevi postico exceptis), antice vix perspicue retuso, subfortiter (antrorsum a basi gradatim magis subtiliter, latera versus magis grosse) punctulato, lateribus ante medium haud (pone medium vix) sinuatis, angulis anticis obtusis minus productis posticis fere nullis, basi anguste sat fortiter elevato-marginata; elytris minus anguste crenulato-striatis, stria subsuturali profunde (ceteris leviter) impressis, interstitiis subtilissime coriaceis subplanis subfortiter (latera versus subgrosse rugulose) sat crebre punctulatis; pygidio coriaceo leviter punctulato; metasterno medio subtilius (latera versus sat grosse) punctulato; tibiis anticis minus elongatis, sat latis. Long., $2\frac{1}{4}$ l.; lat. $1\frac{2}{5}$ l.

Closely allied to *O. blackwoodensis*, Blackb., but differing from it *inter alia* by its conspicuously brassy tone of colour (almost golden on the pronotum), the clypeal carina very strongly arched (its convexity forward, and causing the clypeus to be extremely short), the pronotum considerably less strongly punctulate and with its sides all but non-sinuate behind the middle, and the elytral interstices nearly flat. The forehead with a median conical tubercle (or short horn) in the male in combination with the pronotum margined on its base by a rather strong raised edging and small size will separate this species from the other described Australian *Onthophagi*.

S. Australia; Murray Bridge.

O. Tamworthi, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; minus nitidus, coriaceus; obscure viridis, tarsis antennisque ferrugineis (harum clava nigricanti); clypeo crebre sat grosse ruguloso-punctulato, antice leviter emarginato; sutura clypeali fortiter carinata fere recta; carina frontali sat fortiter elevata antrorsum leviter arcuata; capite inter carinas crebre sat grosse subrugulose punctulato; oculis angustis sat planis minus subtiliter granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra crebre fortiter punctulato, postice longitudinaliter manifeste canaliculato, antice breviter retuso, supra partem retusam obtuse transversim carinato, utrinque prope latera foveolato, lateribus ante medium haud (pone medium manifeste) sinuatis, angulis anticis sat obtusis minus productis posticis sat rotundatis, basi vix perspicue (in medio sat manifeste) elevato-marginata; elytris subtiliter nitide crenulato-striatis, interstitiis convexis, his cum striis irregulariter minus crebre fere subgrosse sparsim (latera versus magis crebre) punctulatis; pygidio metasternoque sat grosse punctulatis.

Maris quam feminæ tibiis anticis manifeste magis elongatis. Long., $3\frac{1}{4}$ l.; lat., 2 l.

A very distinct species, recalling to mind by its general appearance the species referred to above under *O. australis*, Guér., but with the base of its pronotum very differently margined, the frontal carina of its male not elevated at the ends, the club of its antennæ dark, its size much less, &c., &c.

N.S. Wales (Tamworth); Mr. Lea.

O. Frenchi, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; minus nitidus, subtiliter coriaceus; æneus, nonnihil cuprascens, tarsis palpis antennisque ferrugineis (harum clava nigricanti); clypeo ut *O. Tamworthi*, Blackb., sutura clypeali (maris leviter, feminæ sat fortiter) carinata, carina frontali sat elevata (maris retrorsum arcuata, feminæ recta); capite inter carinas ut clypeus sculpturato; oculis ut *O. Tamworthi;* prothorace quam longiori ut 18 ad 11 latiori, supra crebre sat fortiter punctulato, supra æquali (foveis sublateralibus et canali longitudinali postice minus perspicuo exceptis), lateribus ante medium haud (pone medium vix manifeste) sinuatis, angulis anticis vix obtusis leviter subproductis posticis fere nullis, basi vix perspicue (in medio sat manifeste) elevato-marginata; elytris subtiliter nitide crenulato-striatis, interstitiis convexis subtilius sat crebre (latera versus magis fortiter) punctulatis; pygidio metasternoque fortiter nec crebre punctulatis.

Maris quam feminæ tibiis anticis manifeste magis elongatis. Long., 3 l.; lat., $1\frac{9}{10}$ l.

Not unlike the preceding but readily distinguished from it by, *inter alia*, its pronotum not transversely carinate.

N.S. Wales (Queanbeyan); Mr. Lea.

O. henleyensis, Black. The differences between this species and that which I have no doubt is *jubatus*, Har., are very considerable but do not lend themselves readily to tabulation on account of the great difference between the sexes of the latter. In *henleyensis* the pronotum is in both sexes very evidently coarser than in female *jubatus*, very much coarser than in male *jubatus;* both sexes are nitid,—the male of *jubatus* opaque; the pronotum is pilose in front only in the male—in *jubatus* in both sexes. The frontal horns in numerous examples of male *henleyensis* are in their greatest development short stout conical and divergent,—in the single male of *jubatus* examined they are long slender and arched. On the whole the males of the two species are not much like each other, while the females bear considerable resemblance *inter se*.

O. victoriensis, sp. nov. Sat latus; supra glaber; subtus fulvo-hirtus; subnitidus, elytris subtilissime coriaceis; niger; clypeo grosse crebre subrugulose punctulato, antice sat

fortiter emarginato utrinque subdentiformi; sutura clypeali fortiter (præcipue in medio) carinata, utrinque abbreviata; carina frontali sat fortiter elevata fere recta; capite inter carinas grosse minus crebre punctulato; oculis sat angustis, leviter convexis, perspicue granulatis; prothorace quam longiori ut 8 ad 5 latiori, sat crebre sat grosse (antice minus grosse) punctulato, postice longitudinaliter manifeste canaliculato, utrinque foveolato, antice vix retuso, lateribus ante medium haud (pone medium modice) sinuatis, angulis anticis subacutis parum productis posticis fere nullis, basi sat fortiter elevato-marginata; elytris sat fortiter crenulato-striatis, crenulis latera versus subpunctiformibus, interstitiis convexis sparsim minus subtiliter punctulatis; pygidio (hoc coriaceo) metasternoque fortiter punctulatis. Long., $2\frac{1}{2}$ l.; lat., $1\frac{7}{10}$ l.

I am doubtful of the sex of my unique example of this species, which belongs to a group in which there is usually very little external difference between the sexes,—but the front tibiæ being decidedly broad I suspect it is a female. It is near *O. henleyensis*, Blackb.; but that species has elytra non-coriaceous and very much more rugulose, and considerably narrower eyes.

Victoria; I am uncertain of the exact habitat.

O. submuticus, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; pernitidus; niger, tarsis palpis antennisque (harum clava testacea) ferrugineis; clypeo transversim ruguloso, antice vix sinuato; sutura clypeali integra, leviter carinata; carina frontali nulla; capite pone clypeum sparsim subtiliter punctulato; oculis minus angustis, leviter convexis, nitidis, vix perspicue granulatis; prothorace quam longiori ut 18 ad 11 latiori, sparsim subtilissime nec obsolete punctulato, postice longitudinaliter haud canaliculato, æquali (foveolis sublateralibus exceptis), lateribus (his fortiter rotundatis) ante medium haud (pone medium minus fortiter) sinuatis, angulis anticis subacutis posticis late obtusis, basi nullo modo marginata; elytris punctulato-striatis, puncturis quam striæ multo latioribus parum profundis, interstitiis sat planis, subtilius sat crebre punctulatis; pygidio crebre subtilius (metasterno sparsim fortiter) punctulato. Long., $3\frac{4}{5}$ l.; lat., $2\frac{1}{5}$ l.

Allied to *O. muticus*, Macl., and *inermis*, Macl. This species differs from the insect which I believe to be the former *inter alia* by its sparsely and strongly punctulate metasternum; from that which I take to be *inermis* by, *inter alia*, its still more polished surface and its elytral interstices very conspicuously punctulate. The sides of the prothorax are much more strongly rounded than in any specimen that I have seen of either of the species just

mentioned. I am doubtful as to the sex of my unique example of *submuticus*, but as the external teeth of the front tibiæ are fairly strong and the clypeal suture is distinctly carinate I deem it probably a female.

N. Queensland.

O. muticus, Macl. This species together with *inermis*, Macl., and *submuticus*, Blackb., form a small group closely allied *inter se* and without any other close allies so far as I know. Their surface is black, decidedly (or very) nitid, the pronotum without any trace of basal margin and not (or excessively finely) punctulate, the head without frontal carina (but slightly prominent close to the inner margin of the eyes) and with the clypeal suture non-carinate (male) or slightly carinate (female), the front tibiæ about the same length in the sexes but more strongly toothed externally in the female than in the male, the clypeus not (or scarcely) sinuate in front. I am not sure that I know both sexes of any member of the group except *muticus*, but I do not feel any doubt of the sexes unknown to me confirming the above information. I think I know only the male of *inermis* and the female of *submuticus*, and it is perhaps just possible that *submuticus* may be the female of *inermis*, but I think it most unlikely, owing to the very much more strongly rounded sides of the prothorax in the former. In *muticus* the female pronotum and elytra are just perceptibly punctulate (those of the male not perceptibly) but there is no such difference as there would be in this respect between the male and female of *inermis* if my *submuticus* were the female of that species. The metasternum of the species that I identify with *muticus* is closely and finely punctulate.

O. inermis, Macl. The only specimen I have seen that I can refer to this species is in the collection of Mr. Lea. It is evidently a male. It agrees with Macleay's very brief description; and also with his note of difference from *muticus*, Macl., in being "smaller, more brilliant, smoother on the thorax and more deeply striated on the elytra." It also differs from the insect mentioned above as *muticus* in having the puncturation of its metasternum sparse and strong,—a character not mentioned by its author.

O. Comperei, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; minus nitidus, subtiliter coriaceus; niger, tarsis palpis antennisque (harum clava testacea) ferrugineis; clypeo antice emarginato, sutura clypeali sat fortiter carinata; carina frontali fere nulla, capite inter oculos utrinque tuberculo sat magno armato, inter carinas subgrosse nec profunde punctato; oculis minus angustis, sat convexis, perspicue sat obsolete granulatis; prothorace quam

longiori ut 18 ad 11 latiori, crebre minus subtiliter punctulato, postice longitudinaliter vix manifeste canaliculato, lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis subacutis posticis fere nullis, basi nullo modo marginata; elytris sat fortiter crenulato-striatis (crenulis certo adspectu punctiformibus quam striæ latioribus), interstitiis convexis sparsius subtiliter perspicue punctulatis; pygidio sparsim obsolete (metasterno sat grosse puncturis nonnullis minoribus intermixtis) punctulato.

Maris clypeo antice fortiter emarginato utrinque subdentiformi, tuberculis frontalibus conicis, tibiis anticis nonnihil elongatis, pronoto antice plus minusve retuso.

Feminæ clypeo antice leviter emarginato haud dentiformi, tuberculis frontalibus obtusis, tibiis anticis sat brevibus, elytris magis opacis, pronoto (foveolis lateralibus exceptis) æquali. Long., 3 l.; lat., $1\frac{4}{5}$ l.

I have named this species after Mr. G. Compere, of W. Australia, who is rendering very valuable service in his investigations of insect parasites.

N.B.—Since writing the above description I have seen male examples in the collection of Mr. Griffith (which I hesitate to separate from this species) evidently more nitid than the type and having the frontal tubercles prolonged into considerable horns and the front of the pronotum quite strongly retuse.

N. Queensland.

O. sydneyensis, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; nitidus; niger, palpis tarsis et antennarum basi ferrugineis; oculis angustis subfortiter granulatis; clypeo antice sinuato; prothorace quam longiori ut 18 ad 11 latiori, supra subtilius sat crebre punctulato, antice retuso, utrinque foveolato, lateribus ante medium haud (pone medium vix) sinuatis, angulis anticis sat obtusis posticis fere nullis, basi nullo modo marginata; elytris punctulato-striatis, puncturis quam striæ sat latioribus, interstitiis sat planis crebrius subtilius punctulatis; pygidio crebrius subtilius (metasterno sparsim subtiliter,—pone coxas intermedias sparsissime subfortiter) punctulatis.

Maris capite fere lævi inter oculos bicorni; pronoto antice fortiter retusa, obsolete punctulato; tibiis anticis paullo elongatis.

Feminæ clypeo sat fortiter ruguloso, sutura clypeali carinata, capite pone clypeum sparsim punctulato et bituberculato, pronoto antice brevissime retuso, tibiis anticis sat brevibus. Long., $2\frac{1}{4}$ l.; lat. $1\frac{3}{5}$ l.

Near *mutatus*, Har., but *inter alia* without the least trace of a basal margin to the pronotum; the head of the male without any clypeal carina or distinct puncturation, &c.

N.S. Wales; Sydney (Mr. Lea).

O. Dumbrelli, sp. nov. Mas (?). Sat latus; supra (pygidio setoso excepto) glaber; subtus fulvo-hirtus; sat nitidus; niger, tarsis palpis antennisque (harum clava dilutiori) ferrugineis; clypeo transversim ruguloso-punctulato, antice vix sinuato; sutura clypeali sat fortiter carinata utrinque abbreviata; carina frontali sat elevata; capite inter carinas subtilius nec crebre punctulato; oculis angustis sat aspere granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra antice crebrius fortius (basin lateraque versus magis sparsim magis subtiliter) punctulato, postice longitudinaliter sulcato, antice perspicue retuso (parte retusa media antrorsum perspicue sat late gibbosa), foveis sublateralibus sat profundis, lateribus ante medium vix (pone medium fortius) sinuatis angulis anticis sat acutis posticis obtusis, basi haud marginata; elytris punctulato-striatis, puncturis in striis quam striæ sat latioribus, interstitiis subconvexis subtilissime coriaceis subtiliter minus, crebre (latera versus minus subtiliter) punctulatis; pygidio coriaceo sparsim leviter (metasterno sparsim subtilius, antice subgrosse) punctulato; tibiis anticis leviter elongatis; unguiculis sat parvis. Long., $2\frac{3}{4}$ l.; lat., $1\frac{3}{5}$ l.

A small inconspicuous species resembling *O. Fletcheri*, Blackb., and *O. sydneyensis*, Blackb., and differing *inter alia* from the former by its clypeus not emarginate in front and the testaceous club of its antennæ, from the latter by its pronotum longitudinally sulcate (except near the front) and differently punctulate. Also resembles some species of Group V. (e.g. *O. Helmsi*, Blackb., which has the metasternum very differently sculptured, &c.). Taken at Galston by Messrs. Lea and Dumbrell; given to me by the former.

N.S. Wales.

O. negatorius, sp. nov. Fem. (?). Sat latus; supra glaber; subtus fulvo-hirtus; sat nitidus; niger leviter ænescens, tarsis palpis antennarumque basi subferrugineis; clypeo transversim ruguloso, antice emarginato; sutura clypeali sat fortiter carinata; carina frontali sat obsoleta arcuata et sinuata vix continua; capite toto pone clypeum sat æqualiter sat grosse punctulato; prothorace quam longiori fere ut 18 ad 11 latiori, supra sat æquali, sat crebre minus subtiliter punctulato, versus latera vix foveolato sed tuberculo obtuso lævi instructo, lateribus ante medium haud (pone medium sat

fortiter) sinuatis, angulis anticis fere rectis posticis obtusis, basi haud marginata; elytris crenulato-striatis, totis crebre inæqualiter minus subtiliter punctulatis, interstitiis subconvexis inæqualiter (subtiliter et subtilissime) coriaceis (sicut partes nonnullæ magis nitidæ videntur); pygidio fortiter sat crebre (metasterno sparsim subtilius) punctulato; tibiis anticis sat brevibus; unguiculis parvis. Long., $1\frac{4}{5}$ l.; lat., $1\frac{1}{10}$ l.

This very small *Onthophagus* was given to me by Mr. Lea. From its immediate allies it differs as follows, *inter alia* :—From *Dumbrelli*, Blackb., by the dark club of its antennæ; from *sydneyensis*, Blackb., and *Fletcheri*, Blackb., by the close strong puncturation of its elytral interstices. It also resembles some species of Group V. If its pronotum were margined at the base it would fall in the tabulation beside *O. henleyensis*, Blackb., and *jubatus*, Har., differing from both (female) by the very much finer puncturation of its pronotum. It has much superficial resemblance to the female of *O. nitidior*, Blackb., from which (disregarding the unmargined base of its pronotum) it differs by the strongly sinuous and scarcely distinct carina of its pronotum as well as by the much more close and confused puncturation of its elytral interstices, &c. The irregular puncturation and the uneven coriaceousness of its elytra give the interstices a somewhat rugulose appearance,—the more nitid part seeming to be unevenly prominent.

W. Australia (Donnybrook).

O. Fletcheri, sp. nov. Sat latus; supra pilis subtilibus erectis vestitus; subtus fulvo-hirtus; nitidus (maris elytris minus nitidis, subtiliter coriaceis); niger, tarsis palpis et antennarum basi ferrugineis; clypeo antice emarginato, rugulose punctulato; sutura clypeali sat fortiter carinata; carina frontali sat elevata, antrorsum arcuata; capite inter carinas fortiter punctulato; oculis angustis, minus convexis, perspicue granulatis; prothorace quam longiori ut 16 ad 11 latiori, crebre fortiter punctulato, æquali (foveolis sublateralibus exceptis), lateribus ante medium haud (pone medium sat perspicue) sinuatis, angulis anticis subobtusis parum productis posticis late obtusis, basi nullo modo marginata; elytris sat fortiter punctulato-striatis, puncturis quam striæ sat latioribus, interstitiis fere planis sparsim subtilius (prope latera grosse) punctulatis; pygidio fortiter crebrius (metasterno sparsius grosse) punctulato.

Maris clypeo antice leviter emarginato; carina frontali antrorsum arcuata, elytris pygidioque subtiliter coriaceis, tibiis anticis sat elongatis sat angustis.

Feminæ clypeo antice fortiter emarginato, carina frontali sat recta, elytris pygidioque haud coriaceis, tibiis anticis sat brevibus sat latis. Long., $2\frac{1}{4}$—3 l.; lat., $1\frac{3}{10}$—$1\frac{4}{5}$ l.

The erect pilosity is long on the head and along the front margin of the pronotum, scarcely marked on the general surface of the pronotum, somewhat short (but very well marked) on the elytra and pygidium; the prothorax is rather elongate as compared with that of most *Onthophagi*.

N.S. Wales; Inverell (Mr. Fletcher).

O. subocelliger, sp. nov. Modice latus; supra glaber; subtus fulvo-hirtus; minus nitidus, elytris subtiliter coriaceis; obscure cuprascens, tarsis palpis antennisque ferrugineis (harum clava obscura); clypeo antice sat fortiter emarginato; oculis perangustis perspicue asperatim granulatis; prothorace quam longiori ut 17 ad 11 latiori, supra confertim subfortiter subocellatim punctulato, æquali (foveolis sublateribus sat obsoletis exceptis), lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis sat obtusis posticis minus distinctis, basi nullo modo marginata; elytris sat subtiliter crenulato-striatis, crenulis quam striæ haud latioribus, interstitiis sat fortiter convexis obsolete subrugulose haud seriatim (prope latera paullo magis fortiter) punctulatis; pygidio metasternoque sat grosse punctulatis, hoc in media parte fere lævi, unguiculis parvis.

Maris capite fere lævi vel subtilissime sparsim punctulato; carina frontali sat elevata utrinque perspicue sursum producta; tibiis anticis modice elongatis.

Feminæ capite sat crebre subfortiter punctulato; sutura clypeali sat fortiter carinata; carina frontali minus elevata; tibiis anticis sat brevibus. Long., 2 l.; lat., $1\frac{1}{5}$ l.

This species is probably near *O. ocelliger*, Har., but differs from the description of that species, *inter alia*, by its upper surface devoid of setæ (I have examined numerous specimens) and the interstices of its elytra uniformly convex. The sexual characters of the head are very variable, the frontal carina of the male being in some examples very feeble and scarcely elevated at its ends and one male having the clypeal suture evidently carinate.

Northern Territory of S. Australia.

O. margaretensis, sp. nov. Modice latus; elytris pygidioque setis subtilibus erectis flavis sparsim vestitis; subtus flavo-hirtus; nitidus; rufo-brunneus, capite postice pronotoque læte viridibus, metasterno æneo, antennarum clava testacea; clypeo transversim rugato, antice sat fortiter emarginato; sutura clypeali sat fortiter carinata; carina frontali modice elevata, recta; capite inter carinas crebrius sat fortiter

punctulato; oculis angustis perspicue granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra antice oblique retuso, supra partem retusam obsolete trigibbo, hac grosse punctulato, cetera parte crebrius subtiliter punctulata, lateribus ante medium haud (pone medium sat fortiter) sinuatis, angulis anticis sat obtusis posticis late obtusis, foveis lateralibus sat profundis, basi haud marginata; elytris fortius striatis striis leviter punctulatis (puncturis quam striæ latioribus), interstitiis convexis sparsim inæqualiter (hic et illic sat grosse) punctulatis; pygidio et metasterni lateribus grosse punctulatis; tibiis anticis sat brevibus; unguiculis posterioribus modicis. Long., 3 l.; lat., $1\frac{4}{5}$ l.

I am not certain as to the sex of the unique example of this insect. The extremely deep coarse puncturation of the retuse part of the pronotum in strong contrast to the fine puncturation of the rest of the surface is a very unusual character. The type is in the S. Australian Museum among the relics of the Calvert Expedition and was taken on the Margaret River.

N.W. Australia.

Tabulation of the characters (as indicated in their descriptions) of the Australian ONTHOPHAGI not examined by the author of this memoir, followed by notes on those species :—

A. Dorsal surface pilose or setose
  B. Elytra unicolorous.
    C. Size very large (9 l.) ... ... rupicapra, *Waterh.*
    CC. Size much smaller.
      D. Front of clypeus emarginate.
        E. Front of pronotum retuse, the retuse front topped by a transverse carina perpilosus, *Macl.*
        EE. Front of pronotum retuse, the retuse front topped by a flattened protuberance ... ... villosus, *Macl.*
        EEE. Front of pronotum even ... incanus, *Macl.*, and ocelliger, *Har.*
      DD. Front of clypeus not emarginate.
        E. Male with a frontal lamina and two horns on the head ... ... Thoreyi, *Har.*
        EE. Male with the frontal elevation a mere carina ... ... vilis, *Har.*
  BB. Elytra bicolorous ... ... rubicundulus, *Macl.*
AA. Dorsal surface glabrous.
  B. Dorsal surface without red or testaceous markings.
    C. Pronotum not punctulate.
      D. Dorsal surface entirely black (male with two contiguous frontal horns) ... furcaticeps, *Macl.*
      DD. Head and pronotum metallic greenish (pronotum retuse and tuberculate in front) ... ... Froggatti, *Macl.*, and lobicollis, *Macl.*
    CC. Pronotum punctulate.
      D. Front of pronotum retuse.
        E. Dorsal surface non-metallic.

F. Pronotum very finely punctulate ... { acuticeps, *Macl.*, and propinquus, *Macl.*

FF. Pronotum coarsely punctulate.

G. Size large (Long , 6 l.); front of clypeus emarginate ... fissiceps, *Macl.*

GG. Size much smaller (Long., $3\frac{1}{4}$ l.); front of clypeus not emarginate ... ... salebrosus, *Macl.*

EE Dorsal surface more or less metallic.

F. Retuse front of pronotum quadrituberculate (male with a single frontal horn) ... ... Crotchi, *Har.*

FF. Retuse front of pronotum not quadrituberculate.

G. Size comparatively large (Long., $4\frac{1}{4}$ l.) ... . lucidicollis, *Bohem.*

GG. Size much smaller (Long.. $2\frac{3}{4}$ l.) purpureicollis, *Macl.*

DD. Front of pronotum not retuse.

E. Dorsal surface non-metallic .. parallelicornis, *Macl.*

EE. Dorsal surface more or less metallic.

F. Elytral interstices opaque .. evanidus, *Har.*

FF. Elytral interstices notably more nitid.

G. Alternate interstices of elytra convex ... ... planicollis, *Har.*

GG. Interstices of elytra equal *inter se.*

H. Pronotum coarsely punctulate granum, *Lansb.*

HH. Pronotum finely punctulate viridiobscurus, *Blanch.*

BB. Dorsal surface with red or testaceous markings.

C. Pronotum bicolorous . ... rubescens, *Macl.*

CC. Pronotum unicolorous.

D. A conspicuous black fascia on the red elytra ... ... minusculus, *Macl.*

DD. Shoulders, sides, and an apical spot on elytra red ... ... Fabricii, *Waterh.*

DDD. Elytra with only the shoulders red humeralis, *Macl.*

DDDD. Obscure reddish spots about shoulders and apex only.

E Male with a frontal lamina and horns emarginatus, *Macl.*

EE. No strongly raised frontal prominence in either sex ... ... incornutus, *Macl.*

N.B.—I am unable to place *O. tabellicornis*, Macl., and *O. integriceps*, Macl., even in *this* tabulation.

O. rupicapra, Waterh. A very large species from W. Australia; the elytra clothed with setæ, the male with two disconnected frontal horns. I have seen nothing like it.

O. perpilosus, Macl. A small black species from Queensland, densely pilose on the upper surface; interstices of elytra costiform, the under surface also villose. I have not seen any species resembling it.

O. incanus, Macl. A small species from far North of W. Australia; bronzy black, coarsely punctulate and densely clothed with erect grey pubescence. Very distinct from all the species before me.

O. vilis, Har., a small species from Somerset (Cape York); the elytra clothed with yellowish pubescence, the head and prothorax coppery, elytra black, nitid. Certainly unknown to me.

O. villosus, Macl. A small species from the far North of W. Australia, clothed above with ashy villosity, the colour black, the pronotum retuse and with a median projection in front. I have seen nothing like it.

O. ocelliger, Har. A small species from Somerset (Cape York); referred to under the heading *O. subocelliger*.

O. rubicundulus, Macl. A very small species from Queensland; unknown to me; seems to be near *O. asper* but *inter alia* differing by its flat elytral interstices.

O. Thoreyi, Har. Quite insufficiently described; probably near *O. Macleayi*, Blackb., but with sexual characters extremely different, whichever sex the type of *O. Macleayi* may be.

O. tabellicornis, Macl. A fairly large species from N. Queensland (Long., 5½ l.). Probably a member of my Group II. but as the description gives no information concerning the puncturation of the pronotum nothing confident can be said about it. If it belongs to that group it is probably distinct from any other known species, as the front of its clypeus happens to be described and is different from that of any other species (of the group) whose author has described that part.

O. lobicollis, Macl. A species of moderate size (Long., 4 l.) from Cape York. The description of the sculpture of the pronotum is to me unintelligible. However, I know no species that combines the following characters of *O lobicollis*,—very nitid, black, head and thorax greenish, thorax smooth (i.e., I suppose, unpunctured) with a large and prominent tubercle in front, head of male with a lamina which (as I read the description) is both elevated and emarginate in the middle.

O. Froggatti, Macl. I cannot find any definite character in the description of this species to distinguish it from *O. lobicollis*, Macl, unless it be that the front of the pronotum is bituberculate, but the description of the pronotum of the latter is so indefinite that I am not sure Sir W. Macleay does not mean to say that the front of its median tubercle is emarginate,—in which case the difference would be slight.

O. furcaticeps, Mast. (*furcatus*, Macl.). From N. Queensland (Long., 3½ l.). A black, nitid, species, with the pronotum unpunctured, and retuse in front with two small tubercles,—the head of the male with two contiguous horns. I have not seen any insect that can be either sex of this species.

O. acuticeps, Macl. A small species from the far North of W. Australia; black; very nitid; front of clypeus in male pointed, female rounded; two short frontal horns (apparently in both

sexes) pronotum retuse in front, with four tuberosities which are in female "not noticeable" (i.e., I suppose, very feeble); interstices of elytra convex (no information as to their puncturation). No species before me seems to fit this description.

O. fissiceps, Macl. This species from the far North of W. Australia must be extraordinarily like the insect that I regard as *O. Erichsoni*, Hope (from Port Essington) in many respects, but as its author states that the front of its clypeus is emarginate (as well as pointed and reflexed) in the male, and that some part of the pronotum is rugulose, it is no doubt distinct. I have not seen it.

O. integriceps, Macl. The description of this species is a mere enumeration of differences from *O. fissiceps*, so that it is difficult to gain a clear notion of its characters, but the best idea I can form of it seems to point to its being identical with the species referred to above as *O. Erichsoni*, Hope. The size Hope gives is Long., 4¼ l. Macleay says 6 l. My specimens vary from 4 l. to 5½ l. It should be noted however that the puncturation of the pronotum is not mentioned by Macleay as a point of difference from *fissiceps*, and if it is *not* different,—then *integriceps* is probably a good species.

O. salebrosus, Macl. This species (Long., 3¼ l.) from the far North of W. Australia is black and nitid, with a non-carinate head, the clypeus rounded in front, the pronotum rugulose, retuse in front with four tubercles, the elytra tuberculate. It is no doubt a very remarkable species, which I have not seen.

O. Crotchi, Har. This is a large species (Long., 6½l.), its exact habitat not recorded, its general colour dark brown with some parts greenish, a single elongate horn on the head of the male (the only sex described), its pronotum punctulate and in front retuse and feebly quadrituberculate. I have not seen any *Onthophagus* resembling it, and cannot determine its place in the genus.

O. lucidicollis, Bohem. A fairly large species (Long., 4¼l.), reported from Sydney. I judge from the description that it must be near *O. australis*, from which its "scarcely punctulate" pronotum and dark antennal club seem to distinguish it. Its male frontal characters are those of a very feebly developed male *australis*. It seems also to resemble *O. tweedensis*, Blackb., differing by *inter alia* its dark antennal club and the obtuse front angles of its prothorax.

O. purpureicollis, Macl. This small species from N. Queeensland is very briefly described. It is said to be black, nitid, with the pronotum purplish, the head with two small tubercles, the clypeus acuminate and reflexed, the pronotum finely punctulate and retuse in front, the elytra strongly striate (no information

about the interstices, or the clypeal suture). No specimen before me seems to fit the description.

O. emarginatus, Macl. A small species from Cape York (Long., 2½ l.), black (the head and prothorax nitid and bronzy, the elytra subopaque and indistinctly marked with reddish), the clypeus feebly emarginate, the head with a frontal lamina horned at the ends, the pronotum finely punctulate and slightly retuse in front, the elytral interstices flat.

O. parallelicornis, Macl. A fairly large species (Long., 4 l.) from Cape York, black, subnitid clypeus non-emarginate, head with frontal lamina horned at each end, pronotum finely punctulate, non-retuse in front and devoid of tubercles, the elytral interstices wide and rugulose.

O. incornutus, Macl., is from Queensland (Long., 2⅓ l.), black, subnitid (pronotum of female said to be coppery, elytra spotted with red), front of clypeus almost truncate, general surface very finely punctulate, a feeble obtuse frontal carina in male (wanting in female), elytra with wide flat interstices (no mention of pronotum being retuse or tuberculate).

O. evanidus, Har. Probably near *O. Fletcheri*, Blackburn, but not likely to be identical as it is not all probable that Harold would have failed to mention the presence of elytral setæ; moreover the frontal characters of the male do not agree in the two species, *Fletcheri* has no coppery tone of colour, and the habitat of *evanidus* (Tasmania) is very remote from that of *Fletcheri*.

O. planicollis, Har. A species of moderate size (Long., 4 l.) from Cape York, black except the head and pronotum which are coppery, the head devoid of transverse carinæ, the pronotum coarsely punctulate and neither retuse nor tuberculate, the elytra with alternate interstices elevated and granulate - punctulate. Associated by its author with *O. Kingi* (? Har.), and *Erichsoni* (? Hope). By the latter name no doubt *inermis*, Macl., was intended, but *Erichsoni* is a very different insect (see my note on *O. Erichsoni*, Hope). The alternate convexity of the elytral interstices is an unusual character among the Australian *Onthophagi*. The antennæ are yellow.

O. granum, Lansb. An extremely small species (Long., 1⅓ l.) from Cape York, black, nitid (except the head and pronotum which are bronzy), the clypeus emarginate in front, the head bicarinate, the pronotum strongly punctulate and neither retuse nor tuberculate, the elytral interstices convex and unpunctured, the club dark. Said to be near *O. parvus*, Blanch., and *O. incornutus*, Macl., but the author does not say that he has seen the type of either of those species neither does it appear *probable* that he has done so, and therefore the statement probably means no more than that Lansberge has arrived at that

conclusion from his reading the very insufficient descriptions of those two. For my own part I cannot think that *granum* is very near *parvus* otherwise than superficially, if my identification of the latter (my reasons for which will be found under the heading of *parvus)* be correct. It is not of much use to compare an *Onthophagus* with an almost undescribed insect without stating the grounds on which it has been identified, so that the correctness or otherwise of the determination can be estimated.

O. promptus, Har. A brightly metallic species from "Northern Australia," of moderate size (Long., 3—3¾ l.), clypeus non-emarginate in front, head bicarinate, antennæ red, pronotum neither retuse nor tuberculate, the elytral interstices subconvex, feebly but closely punctulate. I do not think I have seen it, nor can I place it in any group as the description makes no reference to the base of the pronotum. It seems to me very probably identical with *O. viridiobscurus*, Blanch.

O. discolor, Hope. There can hardly be a doubt I think that this is a synonym of *O. viridiobscurus*, Blanch. The description is shorter than that of *viridiobscurus* but does not indicate any definite distinctive character. The size quoted is the same. The habitat of *viridiobscurus* (Raffles Bay) is very near to that of *discolor* (Port Essington).

O. viridiobscurus, Blanch. This is a species of moderate size (Long., 3½ l.) from the Port Essington region, nitid, dark metallic green, the clypeus non-emarginate in front, head without a frontal elevation *(discolor* is said to have a frontal carina, probably sexual), pronotum very finely punctulate and without carina or tubercle, elytra with striæ strongly punctulate and interstices evidently convex and very finely punctulate, antennæ brown (in the description of *discolor* called yellowish). I do not know any species near enough to *O. viridiobscurus* to need any statement of differentiating characters,—except of course the preceding two, which are probably not distinct from it.

O. rubescens, Macl. A very small species (Long., 1¼ l.) from the far North of W. Australia. Apparently very near to *O. cruciger*, Macl. (from the same region) but somewhat differently marked with blackish and having elytral interstices (not "smooth", but) minutely punctulate.

O. minusculus, Macl. From same region and of same size as the preceding. Also very near *cruciger*, Macl., but pronotum without lateral red blotch and the elytra more deeply punctulate-striate with interstices slightly convex and minutely punctulate.

O. Fabricii, Waterh. A very small species from Queensland, closely allied to *O. quadripustulatus*, Fab., its pronotum more sparsely punctulate and the head between the carinæ distinctly punctulate.

O. decurio, Lansb. A comparison of the descriptions of this and of *rubrimaculatus*, Macl., leaves little doubt that Lansberge's name is a mere synonym of the latter.

O. patruelis, Har. The description of this species clearly indicates that the name is a synonym of *O. asper*, Macl.

O. propinquus, Macl. This species does not seem to be distinguished from *O. bicornis*, Macl., by any characters that indicate more than feebleness of development. I regard the name as a synonym.

O. humeralis, Macl. Must be very near to *O. bipustulatus*, Fab , judged by the description. The type is said to be a male, and of *bipustulatus* I know only the female so I am unable to decide whether the two are distinct.

O. Duboulayi, Waterh. I can find no definite character in the description of this species to separate it from *O. jubatus*, Har., of which the name seems to me a synonym.

O. hostilis, Har. I have already (Pr. L.S., N.S.W., 1892, p. 283) pointed out that this is a synonym of *O. Adelaidæ*, Hope.

BUPRESTIDÆ.

STIGMODERA.

S. tyrrhena, sp. nov. Minus lata sat convexa; sat nitida; splendide viridis, elytris rufobrunneis, notulis viridibus (sc. margine basali; macula subhumerali ovali; fascia postmediana omnino transversa—in sutura et utrinque dilatata, exemplorum nonnullorum utrinque interrupta; macula communi apicali elongata nonnihil subquadrata; sutura a basi fere ad medium, postice dilatata; nonnullorum exemplorum sutura inter fasciam postmedianam et maculam apicalem) exceptis, lateribus læte rufis; corpore subtus sparsim breviter albido-pubescenti; capite elongato inter oculos (his leviter obliquis) concavo, crebre sat fortiter punctulato; prothorace quam longiori et postice quam antice ut 8 ad 5 latiori, supra sat fortiter (apicem versus magis subtiliter et magis crebre, latera versus magis crebre) punctulato, lateribus a margine antico longe pone medium divergentibus hinc ad basin fere parallelis, intra angulos posticos vix manifeste foveolato; elytris ad basin leviter antrorsum convexis, pone medium modice dilatatis ad apicem sat fortiter bi-apiculatis, sat fortiter punctulato-striatis, striis 7ª 8ª que antice ad humeros abbreviatis, interstitiis subfortiter punctulatis antice minus convexis apicem versus subcostiformibus, lateribus haud crenulatis; unguiculis inermibus. Long., $5\frac{1}{2}$ l.; lat., $2\frac{1}{5}$ l.

Much like *S. delectabilis*, Saund., in respect of sculpture and coloring (except in the dark parts being of a brilliant green), but

of narrower and less flattened build and with the head considerably more elongate, the base of the elytra margined with green, and the basal two ventral segments much less closely punctulate at the sides.

Queensland (Mr. Lea).

S. subpura, sp. nov. Sat lata, minus convexa; sat nitida; violacea, capite prothorace scutelloque æneis, elytris brunneo-testaceis (basin suturaque anguste,—hac antice paullo magis late,—infuscatis), macula parva nigra transversim ovali communi anteapicali notatis, antennis basin versus cyaneis apicem versus aureis; capite modice producto, sat fortiter sat crebre punctulato, inter oculos (his leviter obliquis) late profunde concavo; prothorace quam longiori (et postice quam antice) ut 12 ad 8½ latiori, subgibbo, haud manifeste canaliculato, supra sat fortiter sat sparsim (antice magis crebre, latera versus crebre sat rugulose) punctulato, lateribus minus arcuatis, latitudine majori paullo pone medium sita; elytris ad basin antrorsum bisinuatim sat fortiter convexis pone medium sat fortiter dilatatis, ad apicem breviter biapiculatis processubus inter se sat approximatis sat æqualibus), striatis, striis subfortiter punctulatis, interstitiis 1°—3° subtiliter sparsim (ceteris confertim minus subtiliter) punctulatis, interstitiis 1° 3° 5° 7° 8° que (7° 8° que antice conjunctis) antice latis tumidis (ut *S. amplipennis*, Saund.), aliunde interstitiis antice minus postice magis convexis, angulis humeralibus rectis. Long., 5 l.; lat., 2 l.

Should be placed near *S. amplipennis*, Saund., from which it differs *inter alia multa* by the remarkable difference between the puncturation of the nearest three interstices to the suture and that of the other elytral interstices.

N.S. Wales (in my collection; also taken by Mr. Lea).

CLERIDÆ.

MACROTELUS.

Trans. Roy. Soc., S.A., 1901, p. 25. I described a species under the name *Elasmocerus picticollis*. Herr. Schenkling (Deutsche Ent. Zeitsch., 1903, p. 12) has displaced the name *Elasmocerus* in favour of *Macrotelus*. There seems to be no doubt of the two names being synonyms but Lacordaire rejected the latter as a *nom. præocc.* on account of *Macrotelia* having been previously used. I presume that Schenkling regards *Macrotelia* as a name that does not invalidate *Macrotelus*, in which I agree with him. I regret that I accepted Lacordaire's conclusion without weighing his premises and therefore call attention to the fact that the insect referred to above should be known as *Macrotelus picticollis*, Blackb.

NATALIS.

N. Leai, Blackb. In describing this species (Tr. R S., S.A., 1899, p. 31) I referred to its agreement in non-generic characters with the description of *Opilo floccosus*, Schenk. (published in 1898) but pointed out that as Schenkling especially mentioned his insect having the securiform maxillary palpi and bifid tarsal lamellæ of an *Opilo* the two species must be distinct. I find, now, that Schenkling has published a note (Deutsche Ent. Zeitsch., 1903, p. 19) to the effect that he has examined more specimens of *O. floccosus* and observes the characters referred to above to be in reality as in *Natalis* to which genus his species must therefore be transferred. This of course makes it identical with my *N. Leai*; and the synonymy will be as follows

Natalis (Opilo) floccosus, Schenk.
Leai (Natalis), Blackb.

TENEBRIONIDÆ.

EXANGELTUS.

E. gracilior, sp. nov. Opacus; nigro-piceus, antennis palpis pedibus et corpore subtus plus minusve rufescentibus; anguste elongatus; sat convexus; setis brevibus subtilibus minus crebre vestitus; prothorace minus fortiter transverso, antice parum emarginato (quam postice sat angustiori), longitudinaliter confertim subtilius strigato, lateribus antice leviter arcuatis postice fere rectis, angulis anticis bene determinatis leviter obtusis posticis subacutis retrorsum directis; elytris sat parallelis, quam prothorax sat latioribus, striis circiter 17 crebre punctulatis impressis, harum puncturis quadratis, interstitiis angustis (alternis vix prominentibus); corpore subtus crebre sat fortiter punctulato; antennis sat elongatis; oculis magnis. Long., 4 l.; lat., 1⅔ l.

Considerably smaller than *E. angustus*, Blackb. It has longer and more slender antennæ, the 3rd joint of which is as long as the 4th and 5th together, while the 10th and 11th together are scarcely longer than the 9th; the head is less depressed than in *E. angustus* but (as in that species) the clypeus is not separated from the front by any transverse furrow or noticeable suture; the prothorax is considerably less transverse than that of *E. angustus* and the longitudinal wrinkling of its surface is very much finer; on the elytra the intervals between puncture and puncture in the striæ are of the same height as the interstices between the striæ (except the alternate interstices which are very slightly prominent); the setæ of the dorsal surface are much finer and less conspicuous. The tarsi are (like those of *E. angustus*) clothed beneath with soft close pubescence.

S. Australia; near Woodville.

CHRYSOMELIDÆ.

PHYLLOCHARIS.

P. melanocephala, Baly. In the Proceedings of the Australasian Association for the Advancement of Science, 1902, p. 402, Mr. Lea announces the occurrence in N.S. Wales of a species under the above designation. I cannot find that Baly described such an insect. Perhaps Mr. Lea refers to *P. melanospila*, Baly, described in the Journal of Entomology, Vol. I., p. 290.

AUGOMELA.

A. ignita. In the Proceedings of the Australasian Association for the Advancement of Science, 1902, p. 417, Mr. Lea has described an insect under this name, having apparently overlooked the fact that Mr. M. Jacoby had already described an Australian *Augomela* under the same name. It appears to me that the two descriptions are founded on the same species, although Mr. Lea's brevity (omitting *e.g.* a description of the shape of the prothorax) makes it difficult to be confident. Jacoby's type (Ann. Ent. Soc. Belg., 1898, p. 368) was from Richmond, N.S.W.,—Lea's from Illawarra, N.S.W.

Postscript.

While the preceding pages have been in the printers' hands it has occurred to me that above, in my tentative Revision of the genus *Onthophagus*, I have used the term "metasternum" somewhat loosely. "Disc of the metasternum" would have been more accurate, as in every case where the segment is mentioned it is the horizontal surface (bounded laterally by the lines of the intermediate coxæ produced hindward to the abdomen) that is referred to, and the "sides of the metasternum" mean the lateral parts of that horizontal surface.

ABSTRACT OF PROCEEDINGS

OF THE

Royal Society of South Australia

(INCORPORATED)

FOR 1902-3.

ORDINARY MEETING, NOVEMBER 4, 1902.

Professor E. H. RENNIE, D.Sc. (President), in the chair.

EXHIBITS.—WALTER HOWCHIN, F.G.S., on behalf of A. Fergusson, exhibited a piece of quartzite from Curramulka, Y.P., rounded and striated on one side by ice action. A. H. C. ZIETZ, F.L.S., showed some 23 species of fish from the Lower Murray. G. G. MAYO a few specimens of mudstones containing pebbles, from the Razorback near Hallett, which Mr. HOWCHIN pronounced to be of glacial origin and of the same age as the Cambrian glacial beds of the Sturt and Onkaparinga Rivers. H. T. PHILLIPPS and T. C. GREENWAY B.Sc., showed in large numbers and variety rock specimens and rock sections from Southern Yorke Peninsula to illustrate their paper.

BALLOT.—W. H. Baker, chemist, Glen Osmond Road, Parkside, and W. J. Vandenbergh, barrister and solicitor, Adelaide, were elected as Fellows.

PAPER.—"Notes on the Geology of Southern Yorke Peninsula," by T. C. Greenway, B.Sc., and H. T. Phillipps, communicated by W. HOWCHIN, F.G.S.

A vote of thanks was passed to those exhibiting specimens and those giving the paper.

ORDINARY MEETING, APRIL 7, 1903.

Professor E. H. RENNIE, D.Sc. (President), in the chair.

EXHIBITS.—A. H. C. ZIETZ, F.L.S. (Assistant-Director of the Museum), native instruments, &c., from Way College, including stone for crushing and bruising seeds, stone axe from Rivoli Bay, necklace of *Dentalium* shells from Western Australia, several pointing-sticks of hardwood stained with blood and ornamented with eagle feathers and human hair; bone breccia from Naracoorte Caves. Mr. ZIETZ also exhibited a pair of musical instruments from Central Australia, of mulga wood. Referring to the bone breccia, Mr. HOWCHIN said that the deposit is covered by about

a foot depth of stalagmitic material. J. G. O. Tepper, F.L.S., showed two cases of Australian *Phasmidæ*, illustrating his paper read before the Society in October last. He remarked these were some of the largest insects evolved and exclusively vegetable feeders. Mr. Tepper also laid on the table a fossil leaf from the Ardrossan Tertiaries. Stirling Smeaton, B.A., mentioned that he had found a Phasmid, or stick insect, very closely resembling the leaf of a *Casuarina*, the tree on which the insect was captured. W. H. Baker exhibited a crab *(Portunus corrugatus)*, Pennant, described as far back as 1777, and interesting as having a wide distribution. The present specimen was dredged by Dr. Verco in Investigators Straits last January. W. H. Selway showed specimens of friable kaolinised felspathic rocks from Longwood Gully, which is being used for the manufacture of porcelain. W. Howchin, F.G.S., placed on exhibit before the meeting a number of gypsum crystals discovered by Mr. James A. McGavisk in the sides of a creek between Glenelg and Fulham. The gypsum has formed in nests of crystals in the subfossil bed characteristic of the raised sea area between Plympton sandhills and the coast. Within geologically recent times these marshy flats were open to the sea, but in its retreat the marine forms became extinct over the area, and the land has gradually sweetened. The gypsum is most probably the result of the evaporation of sea water. Whilst the sodium chloride has been carried off by drainage, the less soluble calcium sulphate (gypsum) has crystallised out in the saturated estuarine silts, and in so doing has included numerous shells in the crystals thus formed. These crystals have a brown colour from the earthy matter included within them, and many of those which formed in the shelly stratum, where there would be a freer circulation of water, have suffered corrosion. Mr. Howchin also exhibited a number of rock specimens and native implements to illustrate his paper.

Papers.—"Further Notes on the Geology of Kangaroo Island," by W. Howchin, F.G.S.; "Further Notes on the Australian *Coleoptera*," by Rev. Thos. Blackburn, B.A.

Ordinary Meeting, May 5, 1903.

Professor E. H. Rennie, M.A., D.Sc. (President), in the chair.

Exhibits.—J. G. O. Tepper, F.L.S., showed a species of scale insect *(Mytilaspis pomorum)* that does much mischief to the apple and is in some respects worse than the codlin moth. Mr. Tepper also exhibited specimens of tourmaline and cairngorm from the vicinity of Antechamber Bay, Kangaroo Island. W. Howchin, F.G.S., mentioned that a company had been formed to work this deposit, and explained the conditions under which these gems were found and their probable origin. W. G. Woolnough, B.Sc.,

F.G.S., exhibited specimens of tourmaline and beryl from near Williamstown.

By-laws.—The by-laws drawn up by the Council were agreed to, subject to certain verbal alterations suggested by the meeting.

Ordinary Meeting, June 2, 1903.

Walter Rutt, C.E. (Honorary Treasurer), in the chair.

Apology from President for non attendance.

Exhibits.—A. H. C. Zietz, F.L.S. (Assistant-Director of the Museum), exhibited a bunch of *Eucalyptus* seed cases, and a head and some bones of the English garpike *(Belone vulgaris)*. A peculiarity of the bones of this fish is that they are green. Mr. Zietz also exhibited some very large barnacles *(Balanus* sp.) from Thistle Island; a thread worm *(Gordius* sp.) from a cockroach; the skull of a rabbit, with the incisors in both jaws grown to abnormal length and curved; and a specimen of fluorite in a piece of crystalline limestone from Brighton. In reference to the green bones of the garpike, Mr. Woolnough remarked that the colour may be caused by the presence of vivianite in the bones, phosphate of iron having to some extent displaced the phosphate of lime. This may take place either under healthy conditions or the reverse. Mr. Zietz also laid on the table a specimen of molybdenite from N.S. Wales. Mr. Tepper stated that he had found deposits of the same mineral near Reynella and Yorke Peninsula, and Mr. Stirling Smeaton had found it in the gorge of Reedy Creek, near Mannum. Mr. Woolnough stated that molybdenite was found in large blocks at Glen Innes, in N.S. Wales, and at Moonta, in this State; that it was not of much value commercially, but was used in the manufacture of steel. J. G. O. Tepper, F.L.S., exhibited a case of Northern Territory butterflies, presented to the Museum by Mr. E. H. Hallack, and pointed out how some of the specimens were devoid of scales on the anterior wings, except where the dark markings occur, and that in some instances the males, though smaller, were more beautiful than the females. Mr. Tepper also showed a stone axe of European origin from the collection of the late Mr. Henry Marshall, and a flake with serrated edges—evidently used as a saw—from the same collection. Referring to these, Mr. Woolnough said that the stone from which the axe was shaped might be diorite or aphanite, whilst the flake might be of porcelanite or chert. Mr. Tepper showed nests of the *Thyridopterix huebneri* from Mount Lofty, which presented the appearance of ragged bags; also a rare fungus on daisy leaves *Puccinea distincta*, McAlpine.

W. G. Woolnough, B.Sc., F.G.S., then gave a most interesting and instructive account of the "Metamorphism of Rocks."

ORDINARY MEETING, JULY 7, 1903.

Prof. E. H. RENNIE, D.Sc. (President), in the chair.

EXHIBITS.—J. G. O. TEPPER, F.L.S., passed round a small phial of dark liquid which exuded from certain rocks at Montacute. When first taken it was clear and yellow in colour, and burns with a smoky flame. Other exhibits by Mr. Tepper were a bag of *Thyridopterix huebneri* from Mount Barker, a stick case of the moth *Entomita ignobilis*—a rare neuropterous insect from Umberatana, in the moth stage; the anterior wings are narrow, whilst the posterior ones are filiform and longer than the body—and also a cotton boll-worm (*Heliothis armiger*). The moth of this insect flies by day, whilst the caterpillar feeds at night, and in the day buries itself in the ground. In America it does much mischief in cotton and corn crops. Mr. SAMUEL DIXON showed a specimen consisting of fine acicular crystals of sulphate of zinc, gathered from rock surfaces in a mine in North Queensland, where they were found some six inches in length. W. HOWCHIN, F.G.S., referring to a paper read by him in April last on the "Geology of Kangaroo Island," exhibited some specimens of bitumen and resin found on the coast by him during his late visit to the Island. The bitumen was slightly the heavier, and each of less specific gravity than seawater. In discussing the probable source of these waifs, Mr. HOWCHIN suggested that the antarctic current which impinged on the Southern Coast of Australia—passing, as it does in its course, Kerguelen and other oceanic islands—may be the agent of their distribution. Seams of coal, as well as Tertiary deposits, exist on Kerguelen Island, so that these pieces of bitumen and resinous fragments so widely distributed along the southern shores of Australia may possibly come from thence. Mr. Howchin also exhibited gems obtained from Kangaroo Island during his late visit, which residents had supposed to be rutile, but were precious tourmaline of both green and pink varieties, and strongly dichroic. The gems were of good commercial value. The same gentleman showed a pebble from Marino Beach carrying organic remains, which Mr. Etheridge, of the Australian Museum, Sydney, believes to be a coral of ancient type—*Archæocyathinæ*—not found above the lower Cambrian system. The origin of the pebble is doubtful. Prof. E. H. RENNIE, D.Sc., in introducing the subject of Coorongite, said he wished to bring under the notice of the meeting a paper recently read before the Royal Society of Victoria by Mr. A. Cumming, who had investigated the nature of Coorongite by chemical analysis. Jackson had also made some observations on this substance, which had been published in the Pharmaceutical Journal for 1872. Mr. Cumming first treated the Coorongite with bisulphide of carbon. Neglecting the ash, he found about

one-third dissolved out, and after evaporation of the carbon bisulphide a soft yellow substance remained. The part that remained undissolved in the carbon bisulphide consisted of a brittle dark coloured mass. Neither of these substances were hydrocarbons; both contained oxygen, and were represented by the formulæ—the first $C_{10}H_{18}O$, the latter $C_{10}H_{20}O$; and the former by oxidation readily passed into a substance similar to the latter. These formulæ suggest a connection with vegetable substances of the turpentine and caoutchouc series, and so far as this goes tend to indicate a vegetable rather than a mineral origin. In other words, they do not suggest any connection with petroleum.

PAPER.—"An Analysis of the Ash of the *Acacia salicina*," by A. J. HIGGIN.

ORDINARY MEETING, AUGUST 4, 1903.

Prof. E. H. RENNIE, D.Sc. (President), in the chair.

EXHIBITS.—J. G. O. TEPPER, F.L.S., a sprig of sugar gum (*Eucalyptus corynocalyx*), rendered sickly by a scale insect, probably *Eriococcus paradoxus*, causing a branchlet of juvenile leaves to grow. A black substance on the leaves, it was pointed out, was a fungus growth on the sugary secretion of the coccus. A case of handsome butterflies and beetles from Queensland, presented to the Museum by Mr. Sam. Dixon, was also shown. W. HOWCHIN, F.G.S., referring to that part of his paper read before this Society in April last, on the evidence of occupation of Kangaroo Island by an aboriginal population, exhibited three "native hammers," stones showing signs of use, which had been collected by Mr. S. Buck near the N.E. extremity of the Island. The same gentleman also forwarded two round, smooth stones, known as "seal bullets," or stomach stones of the seal. A. H. C. ZIETZ, F.L.S., some cocoon-like limestones of concretionary origin from Streaky Bay. These stones were open at one end, smooth inside, and slightly rough outside, but whether they are the work of animals or not is not known.

PAPER.—"Note on Supposed Volcanic Dust from Northern Territory," by Prof. E. H. RENNIE, D.Sc., A. J. HIGGIN, and W. G. WOOLNOUGH, B.Sc., F.G.S.

J. S. LLOYD made some interesting remarks on the proposed Trans-Canadian Railway, which it is proposed to construct across the Dominion.

ORDINARY MEETING, SEPTEMBER 8, 1903.

Prof. E. H. RENNIE, D.Sc. (President), in the chair.

A letter bearing date 20th June, 1903, was read from Messrs. Henderson & Hayward, solicitors, reporting that the Incorporation of the Royal Society of South Australia had been effected,

and that the Certificate of Incorporation had been deposited in the General Registry Office, as required by the Associations Incorporation Act, 1890. It was further stated that the Rules on parchment had been filed, and also a memorial of George Gibbes Mayo's appointment to the office of sealholder, in his capacity as Secretary. The Society has therefore now the right to use the word "Incorporated" as part of its title.

W. Howchin, F.G.S., referring to bituminous substances being found from time to time on the southern shores of Australia, and to the suggestion put forward by him as to its probable source being Kerguelen Island, read a cutting from a newspaper which seemed to give some support to this idea. It stated that a bottle thrown into the sea by Capt Ord in lat. 46° S., long. 92° 20′ E., which is between Kerguelen Island and the mainland, had been picked up on the coast of New Zealand, showing an easternly drift.

Papers.—"Notes on *Loranthus exocarpi*," by Chas. F. Johncock; "Description of New Species of Tertiary Corals," Part VI., by John Dennant, F.G.S.; "Description of New Australian *Xysmatodoma*," by Oswald Lower, F.E.S., Lond.; "Notes on the Petrography of the Olary District," by W. G. Woolnough, B.Sc., F.G.S.

Annual Meeting, October 27, 1903.

Prof. E. H. Rennie, D.Sc. (President), in the chair.

Exhibits.—W. J. Vandenbergh exhibited some interesting photographs taken during his recent visit to the Northern Territory; also several specimens of cotton and kapoc, and various kinds of arrowroots, as products of the district. J. G. O. Tepper, F.L.S., showed a peculiar cricket (*Cylindrodes Campbelli*) and a case of Australian crickets. Edwin Ashby placed on exhibit a skin of the Rifle bird (*Ptilorhis paradisea*) from Queensland.

The annual report and balance-sheet were read and adopted.

Election of Officers.—President, Joseph C. Verco, M.D., F.R.C.S.; Vice-Presidents, Prof. E. H. Rennie, M.A., D.Sc., Rev. Thos. Blackburn, B.A.; Honorary Treasurer, Walter Rutt, C.E. Two members of Council to fill the places of those retiring —Walter Howchin, F.G.S., and Edwin Ashby.

The newly-elected President having taken the chair, Prof. Rennie, the retiring President, gave his address on "The Fisheries of Australia."

Mr. Howchin moved that the thanks of the meeting be given to Prof. Rennie for his exceedingly interesting and opportune address, and that it be printed in the Transactions of the Society. This motion having been seconded by the Rev. T. Blackburn, B.A., was passed.

ANNUAL REPORT.

The Council calls the attention of members to the incorporation of the Society which has been effected in its jubilee year, and desires to review briefly the past history of the Society.

In the year 1853 a few gentlemen met in Adelaide for the purpose of forming themselves into "The Adelaide Philosophical Society." The most prominent of these was the late Mr. John Howard Clark, who was subsequently so well known as one of the proprietors and editors of the "South Australian Register."

During the next twenty years or so each Governor of the province became, in turn, President of the Society, whilst many of the leading citizens of Adelaide were enrolled in its membership, including many well remembered professional men.

In the first year of its existence the Society adopted a code of laws, the first of which set out its aims as follows:—"The Society shall be called the Adelaide Philosophical Society, and shall have for its object the discussion of all subjects connected with science, literature, and art." This programme was fairly adhered to, but it is noticeable that the general tendency of the papers was distinctly scientific, or of a practical and industrial nature. In 1876 the late Professor Ralph Tate, F.G.S., who had recently arrived in Adelaide to take the Chair of Natural Science in the infant University, joined the Society, and the next year was elected President. This office he retained for two sessions, and in subsequent years frequently occupied the same honorable position.

From this time, too, the Governor of the State accepted the office of Patron. With the advent of Professor Tate the whole work and objects of the Society were extended. The rules drawn up in 1878 show this, No. 2 reading thus:—"The objects of the Society are the diffusion and advancement of the arts and sciences by the meeting together of members for the reading and discussion of papers connected with the above subjects and by other approved means." In 1879 permission was obtained for the Society to assume the title of "Royal," and henceforth to be known as "The Royal Society of South Australia." New rules were adopted, and the work of the Society and the aims of its mem-

bers were more and more animated and inspired by the genius and work of Professor Tate, who for twenty years, until his death, largely contributed by his paleontological work and scientific papers to place this Society in the honorable position it now occupies in the scientific world.

The papers submitted to the Society during the year give evidence of much valuable work having been done in original observations. The Rev. Thos. Blackburn, B.A., whose zealous labors in determination of Australian coleoptera have enriched the Transactions of the Society for a number of years, has been again an important contributor. In the same department of research, Mr. Arthur M. Lea has submitted Part II. of his "Descriptions of Australian Curculionidæ." Dr. A. Jefferis Turner and Mr. Oswald B. Lower have, respectively, still further extended their observations on the Australian *Lepidoptera*, which are embodied in lengthy papers. Mr. John Dennant, F.G.S., has contributed another valuable paper in elucidation of the "Tertiary Corals of Australia." Mr. W. Howchin, F.G.S., in "Further Notes on the Geology of Kangaroo Island," has dealt with the evidences of extinct glacial action on the eastern side of Kangaroo Island, and other geological and ethnological facts connected with the island. Mr. W. G. Woolnough, B.Sc., F.G.S., has, during the session, submitted some interesting "Notes on the Petrology of the Olary District," whilst other papers connected with physical science and industrial subjects have been contributed by Professor E. H. Rennie, D.Sc. and Mr. Higgin, and Mr. Chas. F. Johncock has given some additional observations on the distribution of *Loranthus exocarpi*. The Council has accepted several other papers which will be placed before the Society in due course.

The microscopical section has been revived with Mr. D. Fleming as chairman, and some 30 members.

The Council would remind the members that the Research and Endowment Fund which it is hoped will follow upon the recent incorporation of the Society, will open out wider fields of usefulness for the Society than have hitherto been possible. This desirable movement is largely due to the initiative and energy of Mr. Samuel Dixon.

During the year now closing only two Fellows have been added to our number. The membership comprises 11 Honorary Fellows, 69 Fellows, 7 corresponding members, and two associates.

THE TREASURER IN ACCOUNT WITH THE ROYAL SOCIETY OF SOUTH AUSTRALIA (INCORPORATED).

Dr.	£ s. d.	£ s. d.
October 1st, 1902.		
To Balance		231 7 1
" Subscriptions—		
Royal Society	69 0 6	
Field Naturalists' Section	14 10 0	
		83 10 6
" Government Grant		52 12 3
" Interest		5 8 9
		£372 18 7

Cr.	£ s. d.	£ s. d
By Transactions—		
Printing	166 17 1	
Illustrating	19 7 6	
Publishing	10 12 5	
		196 17 0
" Memoirs—		
Printing	44 5 0	
Publishing	8 15 4	
		53 0 4
" Grant-in-aid—Field Naturalists' Section		10 0 0
" Library—		
Salary of Librarian	7 10 0	
Sundries	2 13 0	
		10 3 0
" Incorporation and New Rules ...		18 6 11
" Wages—Caretaker		3 0 0
" Printing, Postage, Stationery, &c. ...		13 1 2
" Advertising		3 5 11
" Exchange on Cheques		0 0 6
" Balance in Savings Bank, October 1, 1903		65 3 9
		£372 18 7

Audited and found correct.

J. S. LLOYD, F.I.A.S.A.

Adelaide, 1st October, 1903.

WALTER RUTT, Treasurer.

PRESIDENT'S ADDRESS.

By Professor E. H. Rennie, M.A., D.Sc.

Subject—"The Fisheries of Australia."

In an address which I delivered before this Society two years ago I referred briefly to Australian fisheries, their preservation, and replenishment. Since then considerable attention has been drawn to the question in the S.A. "Register," and some interest has been aroused; but the great importance of the subject is yet but imperfectly realised, or, at least, there is still a great deal of apathy on the part of the public. It is in the hope of enlisting your interest and sympathy, and possibly of inducing the Society as a whole to take an active part in supporting measures now before Parliament, that I venture to deal at some length with the fisheries question. I cannot claim originality in regard to the matter included in this address, nor can I pose as an expert. I am well aware, too, that the arguments and suggestions which I am about to lay before you have, for the most part, been already urged in the press, and in a report by Mr. T. Duffield, Chief Inspector of Fisheries in this State; but, nevertheless, the importance of the question is, in my opinion, so great that I ask for your sympathy while I once more bring it under your notice.

It is a matter of common remark among amateur fishermen that it is much more difficult to secure good fishing than it was 20 years ago. In some places, such as Sydney Harbor, for example, where, say 30 years ago, good fishing was easily obtained, it is easy enough to account for the change, the pollution of the water by the refuse, and till quite lately by a considerable portion of the sewage of the city, being of itself quite sufficient cause, to say nothing of the constant disturbance due to the large amount of steam traffic on the water. But such local causes can hardly account for the fact that in the ocean outside, schnapper, for instance, are becoming much scarcer, and fishing parties are obliged to go much longer distances north or south to secure any number of fish. The same thing is happening, so far as I can gather, all along the inhabited portions of the Australian coast. It is a matter of common knowledge that, whereas schnapper could easily be obtained in numbers close to Port Victor, and even so close at hand as in the Port River, they are now comparatively

scarce. Even on the fishing grounds between Port Victor and Kangaroo Island, and in the vicinity of the latter, fish in any quantity are obtained with increasing difficulty. These statements apply not only to schnapper, but to many other kinds of fish, the sweep, for instance. Ten years ago it was easy anywhere two or three miles along the coast west from Port Victor, on a suitable day, to secure good bags of this valuable fish; *now* this happens only occasionally, and the fish are smaller. I have noticed also that other varieties of fish which haunt the rocks and which were occasionally caught by rod and line, are now rarely secured at all. Even the mullet, though they are still caught in large numbers, are gradually becoming less plentiful, and the fishermen on the south coast complain more and more of the uncertainty of securing good hauls in the season. It is not easy at first sight to account for this falling off, considering the great stretch of ocean on the east, south, and west of us, especially when it is remembered that fishing on a large scale, if it can be called a large scale, has only been going on for about 50 or 60 years, and in many places, on our south coast, for example, for much less than that. If we examine a particular case, say that of the sweep already mentioned, we find that it is a fish taken entirely by line, and, generally speaking, in very calm weather only, so that there is no rapid destruction from any ordinary cause. In the neighborhood of Port Victor there is practically no pollution of the water, no disturbance by ocean traffic, and as we have seen there can be no wholesale destruction of the fish by man. Large numbers of the young fish still haunt the coast, and they are found in almost every rock hole which is washed by the ocean. Why, then, should there be such a falling off? Does this fish take so long to reach maturity that the catching of the larger ones in a particular locality leaves a gap which years of protection will be necessary to fill up? Is their food supply running short? Are they being prevented in any way from gaining access to their proper spawning grounds? Is the balance of life being disturbed in such a way as to involve the destruction of large numbers of the young fry? Or are all these causes contributing to the result? One would naturally suppose that some disturbance of the balance of life is the most probable cause, but such disturbances, though generally easily followed on land, are by no means so easily traced among marine animals. A writer in the "Contemporary" for July, 1901, to whom I referred in my previous address, gives interesting particulars bearing on this point with reference to the fish on the English coasts. According to his statements,

certain fish, such as the hake, bass, and haddock are now very rarely seen, though they were plentiful not long ago. On the other hand, the picked dog shark and the porpoise have, unfortunately, considerably increased, and both of these are causing extensive injury to the pilchard, herring, and mackerel fisheries. The author states that the only thing which seems to disturb the dog sharks is the advent of numbers of the maternal ling fish on their way to their spawning grounds. They are able to drive away the depredators, and it is suggested that quite probably the hake, with its sharp teeth, was able, before its partial extinction, to produce the same effect as the ling fish. Porpoises were at one time extensively captured on the American coasts for their oil, which commanded a ready sale, until, on their becoming scarce, another source of an equally good oil was found, and the hunting of the porpoise ceased. It is suggested that porpoises might be again utilised on the British coasts, or a reward offered for their destruction.

It is obvious, therefore, that by continuous destruction of some kinds of fish, and neglect to provide for the continuance of the species, coupled with the failure to destroy other kinds, the balance of nature is disturbed and enormous injury caused, and there are signs that this is taking place on our own coasts as well as elsewhere. It is well known that there is now a serious falling off in the fish supply of the United Kingdom, or perhaps it would be more correct to say the fish are much more difficult to find, and that the supply is only kept up by more perfect appliances for capture and for delivery in a condition fit for consumption. Steam trawlers, for example, have been introduced, their speed has been increased, and they can, therefore, travel longer distances. They now go as far as Iceland northwards, and the Bay of Biscay southwards, and experiments have been made by Scottish trawlers as far as Newfoundland, the result in the latter case, however, being only smaller hauls than were obtainable 30 years ago on the British coasts. In fact, were it not that the authorities are waking up to the necessity for action the almost total extinction of certain kinds of fish would seem to be only a question of time, and this will, I believe, take place here unless the authorities take up the matter in thorough earnest. It is quite true that we know too little of the conditions prevailing here to state exactly the cause of depletion, but that is all the more reason for trying to find out the influences at work. This leads then to the consideration of the remedy, if any be possible, for the existing state of affairs. The first point to be emphasised is the

necessity for closer observation of the habits, food, and life history of the fish. As regards habits and food much valuable information can be gained from fishermen, but allowance must be made for inaccuracy. The results of their observations are not noted down at the time they are made, and too much reliance is apt to be placed on memory—in most cases an unsafe guide. Moreover, such observations must necessarily be imperfect. The desirability for close and accurate investigation cannot, in fact, be too strongly urged, and such investigation can only be carried out by trained men. Practically nothing is known, so far as I can ascertain, of the life history of our most valuable fish. An important step in the direction of obtaining such knowledge has, however, been made by the N.S.W. Government in the appointment of Mr. H. C. Dannevig as an expert inspector to superintend all fisheries investigations, and, in addition, to initiate a system of fish hatching, and to the publication by the N.S.W. Government of papers and lectures by that gentleman I am largely indebted for facts mentioned in this address. In a lecture delivered before the Amateur Fishermen's Association in Sydney on "Marine Fisheries and Fish Culture," Mr. Dannevig points out that owing to recent careful enquiry in Europe and America, much light has been thrown on the reproduction of fish, and much that was till recently obscure is now understood. The reproduction takes place in various ways. A few fish are viviparous and give birth to from a few dozen to about one hundred of their young, and these are born under such conditions as to lead to the survival of the majority. A second and more common method of reproduction is by means of what are called demersal eggs, these being of comparatively large size and hardy. They are deposited either in large bunches or clusters, usually hidden away in undisturbed places, or separately on seaweed or some other article on the sea bottom. The larvæ from these eggs are fairly well developed, but still are more liable to destruction than those which have been born alive in a more mature condition. Consequently the number produced by the female fish is from a few thousand to forty or fifty thousand. This method of reproduction is observed chiefly among fresh water fish, but it has been noticed also in the case of a few sea fish. A third and still more common method is by means of pelagic or floating eggs, which are deposited a few at a time near the coast, and which, being carried hither and thither, some to the shore and some to mid-ocean, are subject to enormous destruction. To counterbalance this the female fish produces eggs in great numbers from 250,000 to as many as twenty mil-

lions. The writer in the "Contemporary Review" to whom I have previously referred, mentions facts in reference to the turbot which it may be of interest to quote here. He says: "As spring advances turbots leave the outer depths of the English Channel and move towards the land for the purpose of spawning. This interesting work is generally accomplished within the limits of some three, four, or five miles from the shore, the female shedding from five to fifteen millions of eggs, so that it must be at once seen that as the turbot is one of the most productive of creatures, it ought to be one of the most plentiful fishes on the coasts. But note what follows. By July young turbots about half an inch in diameter may be found on the surface of the sea making their first journey towards the land. This effort takes them a month or six weeks to accomplish, their home being, for the first twelve months of life, on the sea bottom within a hundred yards of the shore. But the crossing of this narrow strip of sea brings fearful results to these little ones. The destruction of Napoleon's hosts fleeing from their enemies across the frozen Steppes of Russia will not compare with the yearly losses sustained by these innocents from the horrid beaks of the gulls. History tells us the remnant left of the former was about one in a hundred of that wretched army, whereas I question if of the latter there are left so much as one in a million of these valuable creatures. And the result of their having to run the gauntlet is that, instead of being one of the most numerous fishes on the coast, this ordeal has brought them down to be about the least of all our food fishes." The same writer goes on to point out that the Conger eel also produces from five to fifteen million eggs, but, inasmuch as the young pass through the early stages of their life on the sea bottom among rocks and seaweed, and are, therefore, not exposed to the same dangers as the turbots, they are among the most numerous fish on the British coasts.

It has been already said that very little is known of the life history of Australian fish, yet the statement will bear repetition that this is the first thing to be carefully studied if remedial measures are to be effective. In my address two years ago I spoke of statements made by fishermen at Encounter Bay to the effect that in 1901, when the barracoota were abundant on the coast, they had observed enormous numbers of minute fish near the surface of the water, and these were being devoured in myriads both by gulls and barracoota, the latter being full of them. What these small creatures were they did not know, and probably did not care. It would have been a matter of much interest and quite

possibly of great importance to have determined what they were, and that might easily have been done had there been in this State a competent inspector alert to make enquiries and capable of following up his enquiries by careful investigation. Reference has already been made to the appointment of such a man in N.S.W., and I am informed privately by Mr. Duffield that it is proposed to ask the N.S.W. Government for the loan of his services for a time in order that he may examine into the conditions along our S.A. coasts, and perhaps instruct a local officer as to the lines on which observations should be carried out in the future. Such a proposal would, I am sure, be heartily welcomed by all who are interested in the state of our fisheries, but it will need more than that to cope with the difficulties with which we are faced. I may quote here from the lecture of Mr. Dannevig before referred to. He says: "Latterly it has been recognised, however, that while most excellent and necessary work was carried out by marine laboratories, many important questions relating to marine fisheries could not always be solved ashore. It was found necessary to extend the investigation to the sea itself and where it was essential in order to arrive at a satisfactory solution of questions of a practical nature, to enquire into these in a rational manner and on a sufficiently extensive scale to eliminate the exceptions which often will attend upon experiments carried out upon a small and otherwise limited scale, and give rise to regrettable misconceptions. Such practical investigations, conducted on scientific principles, have lately been carried out by leading men. Dr. Wemyss Fulton, the superintendent in charge of the fishery investigations under the Scottish Fishery Board, has lately dealt with fishery problems in such a way and with singular success. Similar work has also been carried on by Professor Herdman and others in England, while the Americans have long recognised the necessity of carrying out practical investigations. Amongst the European countries bordering on the North Sea there has been evinced lately a strong desire to combine their efforts to enquire into the various factors bearing upon the now greatly declined fisheries of the North Sea. International conferences were held from time to time with a view to establishing co-operation, and, after protracted negotiations, an arrangement has now been made. Great Britain is taking a principal part in this work, and for the coming three years has undertaken to expend a sum of £42,000 on the portion of the work allotted to her. The undertaking is a gigantic one, and, whatever the result may be, it shows the recognition by the leading European countries of the

necessity of treating the fishery questions rationally, systematically, and thoroughly, with a view to arrive at a basis for international legislation applicable to the whole sea area from which they have in the past extracted their enormous supplies, and wherein the natural resources are slow in replenishing supplies, and where depletion prevails."

It need scarcely be repeated that the reasons which have led to such important developments in Great Britain apply with equal force here.

In order to maintain and replenish the fish supply two things are necessary—the prevention of wholesale and useless destruction, and the establishment of hatcheries. As regards the former, it is a matter for congratulation that a Bill is now before Parliament which proposes to consolidate and amend the existing Acts, and thereby to take more stringent measures for the preservation of fish life. The Bill provides for the following additions, among others, to existing Acts, viz.:—To license fishermen, to compel fishermen to furnish returns, to forbid the sale of the roe of fish, to protect crayfish, to inflict penalties for disturbing fish on their spawning grounds, to give inspectors power to enter upon fishing grounds and boats, to examine nets, to prevent foreigners from fishing unless naturalised, to give power to the Minister to remove obstructions to the passage of fish, to pay for the destruction of shags and pelicans, and to provide spawning reserves and hatcheries. These are most important provisions, and if passed and carried into effect will do much to prevent the mischief which is now going on. The proclamation of spawning reserves and the protection of the shallow waters in our gulfs, inlets, and estuaries from indiscriminate net fishing, especially with certain kinds of net, are of the utmost importance, and the enforcement of the law should be vigorously insisted upon. A good deal has already been done in this direction, largely through the efforts of Mr. Duffield, but more is needed. It has been repeatedly shown that the shallow waters referred to are the natural spawning grounds of fish, and often their resort in the earlier stages of life, yet it is notorious that the creeks and inlets of the Port River, for instance, are being perpetually raked by seine nets, the nets being often placed at the mouths of creeks on a falling tide. The chief sinners in this respect are said to be unnaturalised foreigners, who take care not to expose for sale their illegal captures, but dispose of them privately among their own customers. Be this as it may, there are probably no places which should be more carefully guarded against depredations of this kind than the various branches of the Port River,

and the same thing holds good for such places as the estuary of the Onkaparinga, Port Wakefield, Port Pirie, &c., &c.

Whether the mischief to which I have referred is going on in defiance of the law or whether the law as it stands is insufficient to deal with it, I am unable to say, but in any case it is sincerely to be hoped that the new Bill will give ample power to check such outrages. Unless the Bill is carefully drawn and stringently enforced it will be of little use, and the depletion of the fish supply will inevitably go on. That the existing law is not enforced in some directions is apparent from the fact that in our public streets crayfish below the minimum legal size are sometimes exposed for sale, and that, too, in not inconsiderable numbers.

One other preventive measure calls for special mention, namely, the destruction of fish-eating birds. The efforts of the Bird Protection Society have, I am sure, the fullest sympathy of all right-thinking people, in so far as they are directed against the wanton destruction of beautiful and useful birds; but the fact cannot be overlooked that the advent of man has greatly disturbed the balance of nature and rendered necessary measures which seem at first sight highly undesirable. The fisherman has been added to the enemies of the fish, and, especially where his operations are ruthlessly destructive, his influence, added to that of the birds, has altogether disturbed natural conditions and proved too much for the survival of the finny tribes. It would seem to have become necessary, therefore, to take means for the destruction of such birds as shags and pelicans, which are known to devour enormous quantities of fish. It may be, judging from experience gained on British coasts, that even gulls may have to come under some measure of condemnation.

But matters have been allowed to go so far that preventive measures alone will prove inadequate to cope with the increasing depletion of the fish supply. It will be necessary, in addition, to provide for the replenishment of the supply by establishing fish hatcheries, which will not only hatch out young fish, but preserve them in the earlier stages of their life from their numerous enemies. Then when they have reached a certain stage they can be distributed in the open sea and safely left to their own devices. The Bill now before Parliament proposes to do something in this direction, but I doubt whether it proposes to do enough. The N.S.W. Government has made some attempt to establish hatcheries for sea fish both from our own seas and from British waters, Mr. Dannevig having brought with him a number of plaice and soles which have been placed in a protected place in Port

Hacking. I fear, however, from private information, that the scheme is likely to be starved owing to the reckless extravagance which has gone on in other directions. The N.S.W. scheme, you will observe, includes fish acclimatization, an experiment not yet tried, so far as I am aware, in Australasia except in the case of fresh water fish, but an experiment which may yield results of great interest and importance. You may not be aware of the extent to which fish hatching and the replenishment of sea fish has been carried in the Northern Hemisphere. Let me quote again from Mr. Dannevig's lecture: "Sea fish hatcheries have been established in America, Scotland, England, Newfoundland, Canada, and Norway, and the work accomplished from year to year in these various places is well worth noting. In 1898 the various hatcheries in the United States of America produced not less than 857,500,000 fry of different kinds of fish; in 1901 the Canadian hatcheries produced 203,500,000 of fry, while the single hatchery in Norway has been able to develop as many as 400,000,000 fry in one season." The writer in the "Contemporary" quotes a letter from one of the U.S. Fishery Commissioners to the following effect:—"The result obtained in this country by the artificial propagation of food fishes has not only been encouraging, but is phenomenal. No person informed on the subject now disputes the fact that the future of our fisheries must depend for its prosperity in a measure on artificial methods of hatching. The chad fishery, which has become depleted to a remarkable extent, has, by artificial propagation, steadily increased, and amounts to upwards of a million dollars a year, notwithstanding the fact that the abundance has made it possible for fishermen to sell at lower prices than formerly. These fish have been introduced on the Pacific Coast, where they were indigenous, and they have multiplied to such an extent along hundreds of miles of coast that they are now common fish in the markets. As regards the cod, it is only recently that this work has begun, but now they are found in enormous abundance in the neighborhood of our hatcheries in many places where they had never previously been seen in the memory of the oldest fishermen, and in such numbers that a profitable fishery has been maintained from them by a fleet of small vessels. The fishermen confidently look forward to seeing a fishery built up off the New England shore in the near future which will be beyond anything man now living ever witnessed." Surely statements such as these should awaken the powers that be to the possibilities of the future as regards the supply of cheap, wholesome food, to say nothing of the resulting increase in revenue

which would accrue and which is by no means to be despised.

So far I have dealt almost exclusively with sea fish, but in the Murray River there is a source of supply of great value which also is becoming fast depleted, and to which the same general statements are applicable. In October, 1900, Messrs. Stephens and McIntosh, Inspectors of Fisheries in this State, conducted an enquiry into the fisheries of the S.A. portion of the Murray, and a large amount of evidence was collected, which, unfortunately, was never published. It was reserved for the N.S.W. Government—to the disgrace of this State, be it said—to publish, from the pen of Mr. Dannevig, an able summary of the results of that enquiry. The evidence has been carefully and ably sifted and analysed by that gentleman, and his report is most interesting reading. It is clearly shown, after allowing for certain evidence given by some fishermen, evidently with a view to their own interests, that the spawning season is from September to November, that certain kinds of net, more especially the bag net, are fearfully destructive in their effects (and the same is true in a less degree and for different reasons of wire cages), and that birds and turtles are responsible for the destruction of large quantities of fish. It is further shown that fish hatcheries could be easily maintained and made very effective under the conditions which prevail in the Murray, and, lastly, that even in the present unsatisfactory condition of affairs considerable railway revenue is derived from the carriage of the fish. At a conference held in Melbourne in May, 1902, several resolutions were adopted recommending that the following steps, among others, should be taken to preserve the Murray fisheries:—

1. A close season for Murray fish and crustacea from September 1 to December 20 of each year.
2. Investigation by competent officials to ascertain the lowest weights at which codfish, perch, and lobsters are in full roe.
3. Imposition of licence fees.
4. Offering of rewards for the destruction of shags, pelicans, and turtles.
5. Establishment of a hatchery, the expense to be borne equally by New South Wales, Victoria, and South Australia.

The more important of these proposals are, I believe, included in the Bill now before Parliament, and a close season on the Murray has been declared during September, October, and November. Such evidence of the awakening of the authorities to the gravity of the situation is so far cause for satisfaction. That the situation is grave scarcely admits of

dispute, and were a little of the money annually spent in unprofitable ways devoted to the cause I am advocating, there would undoubtedly be not only a great increase in the supply of cheap, wholesome fish, but an accession to the revenue by no means to be despised. Doubtless some fishermen here and there would suffer, for the time being, but ultimately all would greatly benefit, and for the sake of these few it is surely a suicidal policy to endanger the whole future of the fishing industry. I notice that in the discussion in Parliament on the Fisheries Bill one gentleman expressed his belief that there is no immediate necessity to push on the measure. If he means that there is no immediate danger of the fish supply suddenly giving out he is doubtless right, but every year's delay means a change for the worse and increased expense and difficulty when the position has ultimately to be faced. The sooner this is realised by our legislators the better will it be for the Commonwealth of Australia.

DONATIONS TO THE LIBRARY

For Year 1902-3.

TRANSACTIONS, JOURNALS, AND REPORTS.

Presented by the respective Editors, Societies, and Governments.

Austria and Germany.

Berlin—Deutsche Alterthunsfunde, in Nachrichten, uber, 1902 Heft. 5 und 6 ; 1903 Heft. 1.

——— Gesellschaft für Erdkunde, Zeitschrift der, 1902 Nos. 5—6, 10 ; 1903 Nos. 1—3.

——— Gewitter Beobachtungen an der Stationem, Ergebnisse der, 1898—1900.

——— K. Preuss. Meterologischen Instituts.—Deutsches Meteor, Jahrbuch, 1902.

——— Regenkarte der Provinzen Brandenburg und Pommern : Hessen-Nassau und Rheinland, 1903 ; Sachsen und der Thüringischen Staaten ; Schleswig-Holstein und Hanover. 1902 ; Westfalen, 1903.

——— Zeitschrift für Ethnologie, 1902 Heft 2 und 6 ; 1903 Heft. 1.

Göttingen—Königl. Gesellschaft der Wissenschaften und der Georg-Angust Universitat. Math.-Phys. Klasse, Nachrichten von der, 1902 Heft. 2-6 ; 1903 Heft. 1-3.

——— Königl. Gesellschaft. der Wissenschaften zu Göttingen, Geschäftliche Mitteilungen, 1903 Heft 1 ; Mathematisch-physik Klasse, 1903 Heft. 2 und 3.

Heidelberg—Land und Forstwirth schaft in deutsch ostafrika, Berichte über, Ersten Band Heft. 3-5.

Munich—Math. Phys. Classe der K.B. Akad. der Wissenschaften zu München, Abhandlungen der, Band 21, Heft. 3 ; Sitzungsberichte der, 1902, Heft. 3.

Vienna—Kaiserliche Akad. der Wissenschaften in Wien, Sitzung. der Mathematisch-natur., 1902 Nr. 15-17, 19-27 ; 1903 Nr. 1-9, 13-17.

——— K. K. Geologischen Reichsanstalt, Verhandlungen der, 1902 Nr. 11-18 ; 1903 Nr. 1, 3-8.

——— K. K. Naturhistorischen Hofmuseums, Annalen, Band. 15 Nr. 3-4 ; 16 Nr. 1-4 ; 17 Nr. 1-4.

——— K. K. Zoologisch-botanischen Gessellschaft in Wien, 1901 Band 51 ; 1902 Band 52.

Australia and New Zealand.

Adelaide—Public Library, Museum, and Art Gallery of South Australia, Report for 1901-2.

——— Government Geologist, Contributions to the Palæontology of South Australia, by R. Etheridge, jun.

——— Woods and Forest Department, Annual Progress Report, 1901-2.

Auckland—Auckland Institute, Annual Report for 1902-3.

Brisbane—Department of Mines.—Geological Survey, Reports, Nos. 177, 179, 180, 181, 182, and 183; Some Mines and Mineral Deposits at the Heads of the Brisbane, Burnett, and Mary Rivers, by C. F. V. Jackson; Sapphire Fields of Anakie, by B. Dunstan; Mount Biggenden Gold and Bismuth Mine and the Paradise Goldfield, by L. C. Ball; Clermont Goldfield, by B. Dunstan; Stanton Harcourt Diggings and the Mount Shamrock Mine, by L. C. Ball; Yorkey's Goldfield, by L. C. Ball; Visit to the West Coast of Cape Yorke Peninsula and some Islands of the Gulf of Carpentaria, by C. F. V. Jackson; Additions to the Geology of the Mackay and Bowen Districts, by W. E. Cameron; Kangaroo Hills Mineral Field, by W. E. Cameron; Index No. 2 to names of places, mines, etc.

——— North Queensland Ethnography, Bulletin, Nos. 5 and 6.

——— Royal Society of Queensland, Proceedings, vol. 17, part 2.

——— Queensland Flora, part 6; Alismaceæ to Filices.

Melbourne—Australasian Institution of Mining Engineers, Proceedings, first ordinary meeting, 1901 and 1902; meeting held at Auckland, 1903, and Melbourne, 1903; List of Fellows, &c.; Transactions, vol. 8, part 2; vol. 9, part 1.

——— Department of Agriculture, Journal, vol. 1, title page, &c.; vol. 2, parts 1-2.

——— Department of Mines and Water, Annual Report for 1902.

——— Department of Mines.—Geological Survey, Bulletins, Nos. 1-8; Memoirs, 1903, Nos. 1-2; Records, vol. 1, part 1; Chiltern Goldfield and Map.

——— Royal Society of Victoria, Proceedings, vol. 15, part 2; vol. 16, part 1.

——— Victorian Naturalist, vol. 16, No. 5; vol. 19, Nos. 8-12; vol. 20, Nos. 1-4.

Perth—Department of Agriculture, Journal, vol. 7, part 5.

Perth—Department of Lands and Surveys, Report of Under-Secretary for Lands for 1897, 1899-1901; Surveyor-General's Report for 1901.

——— Department of Mines.—Mining Statistics for 1902, October-December; 1903, February-April and June; Report for 1902; Geological Survey, Report on Exploration of North-West Kimberley, 1901, by F. T. Brockman; Journal of the Calvert Exploring Expedition, 1896-97.

——— Stock Department, Report of Chief Inspector for 1897, No. 5.

Sydney—Australasian Anthropological Journal, vol. 5, Nos. 7, 12; vol. 6, Nos. 1-5; vol. 7, No. 2.

——— Australian Museum.—Nests and Eggs of Birds found Breeding in Australia, part 3; Records, vol. 5, No. 1.

——— Department of Mines and Agriculture.—Agricultural Gazette, vol. 13, part 12, vol. 14, parts 1-9; Annual Report for 1902; Geological Survey, Memoirs, Geology, 1903, No. 3; Mineral Resources, 1899, No. 6; Records, vol. 7, part 3.

——— Linnean Society of New South Wales.—Presidential Address, April, 1903; Proceedings, vol. 27, parts 3-4, and Supplement, 1902, vol. 28, part 1.

——— Public Library of New South Wales, Report for 1902.

——— Royal Society of New South Wales, Journal and Proceedings, 1902, vol. 36; Rules, &c., 1902.

——— Sydney Botanic Gardens, Biographical Notes, Nos. 1-4, 6-8.

——— University of Sydney, Reprints of Papers from the Science Laboratories, 1895-6 and 1897-1903. 2 vols.

Wellington—Lands Survey and Mines Department, Annual Report, 35, Colonial Laboratory, 1901.

——— New Zealand Institute, Transactions and Proceedings, vol. 35.

Hobart—Department of Mines, Progress of the Mineral Industry quarter ending March and June.

——— Royal Society of Tasmania, Papers and Proceedings, 1902.

Belgium.

Brussels—Musée Royale d'histoire Naturelle de Belgique, Les nipadites des couches Eocènes de la Belgique par A. C. Seward et A. N. Arber.

——— La Société Royale des Sciences de Liege, Memoirs' 3rd sér., tome 4.

Canada.

Halifax—Nova Scotian Institute of Science, Proceedings and Transactions, vol. 10, parts 3 and 4.

Montreal—Canadian Record of Science, 1902, vol. 8, No. 2; 1903, vol. 9, No. 1.

Ottawa—Department of the Interior.—Geological Survey of Canada, Annual Report, 1899, vol. 12, and maps; Contributions to Canadian Palæontology, vol. 3, part 2; Maps of Manitoba, 1902; Dominion of Canada, Western Sheet, No. 783; Relief Map of Canada and the United States of America, 1900.

Toronto—Canadian Institute, Proceedings, vol. 2, No. 11, part 5; Transactions, vol. 7, No. 14, part 2.

France.

Caen—La Société Linnéene de Normandie, Bulletin, 5e sér., tome 5.

Nantes—La Société des Sciences Naturelles de l'Ouest de la France, Bulletin, 2e sér., tome 2, Tri. 1e.-4e.

Paris—La Feuille des Jennes Naturaliste, Bulletin, 1903, Nos. 388-392.

—— Germination de l'ascospore de la Truffle, par. E. Boulanger.

—— La Société de Geographie Commerciale de Paris, Bulletin, 1902, tome 24.

—— La Société Entomologique de France.—Bulletin, 1902, Nos. 15-21; 1903, Nos. 1-6, 9-12. Annales, 1900, vol. 69, Tri. 1e.-4e.

Rennes—Université de Rennes, Travaux Scientifiques, 1902, tome 1, fasc. 1-3.

Great Britain and Ireland.

Belfast—Belfast Natural History and Philosophical Society, Guide to Belfast and the Counties of Down and Antrim, 1902.

———— Royal Irish Academy, Proceedings, 3rd ser., vol. 6, No. 4; Section A, vol. 24, parts 1-2; Section B, vol. 24, parts 1-3; Section C, vol. 24, parts 1-3. Transactions, Section A, vol. 32, parts 3-5; Section B, vol. 32, parts 1, 2.

Cambridge—Fauna Hawaiiensis, vol. 3, parts 2-3.

————— Philosophical Society, Proceedings, vol. 11, part 7, and vol. 12, parts 1-2.

Edinburgh—Royal Society of Edinburgh, vol. 23.

London—Chemical Society, Charters, Byelaws, &c., for 1903; Journal, 1903, vols. 83-84 for Feb.-May, July-Sept.; Proceedings, 1903, vol. 18, No. 258, and vol. 19, Nos. 259-264, 266, 268, 269.

——— Linnean Society, List of Members, &c., for 1902-3.
——— Royal Colonial Institute, Proceedings, 1902-3, vol. 34.
——— Royal Geographical Society Journal, vol. 20, No. 6.
——— Royal Microscopical Society, Journal, 1902, part 6; 1903, part 1.
——— Royal Society Proceedings, vol. 71, Nos. 469-470, 472, 473, 476-8; Sleeping Sickness Commission, Report, 1903, No. 1; Year-Book for 1903.
——— Wellcome Physiological Research Laboratories, by W. Dawson. 2 copies.
Manchester—Journal of Conchology, vol. 10, Nos. 9-11.
——— Manchester Field Naturalists' and Archæologists' Society, Report and Proceedings for 1902.
——— Manchester Geological Society, Transactions, vol. 27, part 17, and vol. 28, parts 1-6.
——— Manchester Literary and Philosophical Society, Proceedings, vol. 47, parts 1-2.
Middlesex—National Physical Laboratory, Reports for 1901 and 1902.

India.

Bengal—Bengal Secretariat Book Depôt, Tibetan-English Dictionary, by Sarat Chandra Das.
Bombay—Asiatic Society, Bombay Branch, 1902, vol. 21, No. 58.
Calcutta—Indian Museum, Annual Report for 1901-2; Notes, vol. 5, No. 3.
Madras—Government Museum, Anthropological Bulletin, vol. 4, No. 3.

Italy.

Florence—Società Entomologica Italiana, Bulletino, 34th year, Tri. 1e.-4e.
Milan—Società Italiana di Scienza Naturali e del Museo Civico di Storia Naturalo in Milan, Atti della, vol. 41, Fasc. 3°-4°, Fog. 19-32; vol. 42, Fasc. 2°, Fog. 8.
Pisa—Società Toscana di Scienza Naturali, Atti della, vol. 19; Processi Verbali, vol. 13, 3-4 maggio, 8 mazo, 18 gennaio, 6 luglio, 21 dicembro.

Japan.

Tokyo—Asiatic Society, Transactions, vol. 30, part 3.
——— Imperial University, College of Science, Journal, vol. 19, Articles 1, 2, 5.
——— Seismological Society, Earthquake Investigation Committee, Nos. 11 and 12.

Mexico.

Mexico—Instituto Geologico, Boletin, Núm. 16.
——— Sociedad Scientifica, Memorias y revista, 1901, tome 16, Núm. 4-6; 1902, tome 17, Núm. 1-6; 1903, tome 18, Núm. 1.
Toluca—Boletin Meteorologico, Núm. 39-44.

Norway and Sweden.

Bergens—Bergens Museum, Aarbog, 1901, Hefte 2; 1902, Hefte 1; Aarsberetning, 1901.
Stockholm—Antiquarisk Tidskrift, vol. 17, Nr. 1-2.
——— Entomologisk Tidskrift, 1902, Arg. 23, Häft. 1-4.
——— Geologiska Föreningens, Forhandlingar 1902, Tjugofjerde Bandet.
Trondhjem—Kongelige Norske Videnskabers Selskabs, Skrifter 1901.
Upsala—University of Upsala, Bulletin, vol. 5, part 2, No. 10.
——— Regie Societatis Scientiarum Upsaliensis, Nova Acta, 3rd ser., 1901, vols. 19 and 20.

Russia.

Helsingfors—Geographische in Finlande, Meddelangen, 1901-3, vol. 6.
Kiev—La Société des Naturalistes de Kiew, Mémoires, tome 17 Livraison 2.
Moscow—La Société Impériale des Naturalistes de Moscow, Bulletin, 1902, No. 3; 1903, No. 1.
St. Petersburg—La Comité Geologique, Bulletin, tome 20, Nos. 7-10, and tome 21, Nos. 1-4. Memoirs, tome 15, Nos. 4; tome 17, Nos. 1-2; tome 18, No. 3; tome 19, No. 1; tome 20, No. 2.

Sandwich Islands.

Honolulu—Bernice Pauahi Bishop Museum, Additional Notes on Hawaiian Feather-work, by W. T. Brigham, vol. 1, No. 5.

Switzerland.

Geneva—La Société de Physique et d' Histoire Naturelle, Compte-rendu des Séances, 1902, vol. 19.
Lausanne—La Société Vaudaise des Sciences Naturelles, Bulletin, 1902, vol. 38, No. 145.
Neuchatel—La Société des Sciences Naturelles, Bulletin, 1898-9, tome 27.
Zurich—Naturforschenden Gesellschaft in Zurich, June, 1901; March and July, 1902.

SOUTH AND CENTRAL AMERICA.

Monte Video—Sociedad Meteorologica Uruguaya Resumen, ano 11, Núm. 1-4.

Rio de Janeiro—Observatorio, Annuario, 1902, anno 18; Boletin Mensal, Abril-Dec., 1902.

Sao Paulo—Museu Paulista, Revista, vol. 5.

SOUTH AFRICA.

Cape Town—South African Museum, Annals, vol. 2, parts 9 and 11; vol. 3, parts 1-3.

——— South African Philosophical Society, Transactions, vol. 12, pp. 561-896; vol. 14, part 2.

UNITED STATES OF AMERICA.

Baltimore—Johns Hopkins University, Circular, vol. 22, Nos. 160-164.

Berkeley—University of California, Publications: Botany, vol. 1, pp. 1-164; Zoology, vol. 1, No. 2, pp. 1-114.

Cambridge—Harvard University Library, Report for 1902.

——— Museum of Comparative Zoology at Harvard College, Annual Report for 1901-2; Bulletin, vol. 38, No. 8; vol. 39, Nos. 4-8; vol. 40, Nos. 4 and 5. Geological Series, vol. 6, Nos. 1-2.

Chicago—Field Columbian Museum, Publications: Botanical Series, vol. 3, No 1; Geological Series, vol. 1, No. 11; Report series, vol. 2, No. 2; Zoological Series, vol. 3, Nos. 6, 8 9.

Cincinnati—Society of Natural History, Journal, 1902, vol. 20, part 3.

Granville—Scientific Laboratories of Denison University, Bulletin, vol. 11, article 11; vol. 12, article 1.

Indianapolis—Indiana Academy of Science, Proceedings, 1901.

Lawrence—Kansas University, Bulletin, vol. 3, part 6.

New York—New York Public Library, Astor, Lennox, and Tilden Foundations; Bulletin, vol. 6, Nos. 11-12, vol. 7, Nos. 1-8.

Oberlin—Oberlin College Library, Wilson Bulletin, vols. 14 and 15, No. 42.

Philadelphia—Academy of Natural Sciences of Philadelphia, Proceedings, vol. 54, parts 1-3.

——— American Philosophical Society, Proceedings, vol. 41, Nos. 169-171; Transactions, N.S., vol. 20, part 3.

——— Zoological Society of Philadelphia, Annual Report for 1902-3.

St. Louis—St. Louis Academy of Science, vol. 11, Nos. 6-11; vol. 12, Nos. 1-8.

San Francisco — California Academy of Science, Occasional Papers, vol. 8; Proceedings, 3rd ser. Botany, vol. 2, Nos. 3-9; Zoology, vol. 2, Nos. 7-11; vol. 3, Nos. 1-4.

Urbana—Illinois State Laboratory of Natural History, Biennial Report for 1899-1900; Bulletin, 1897-1901, vol. 5.

Washington—National Academy of Sciences, Proceedings, vol. 5, pp. 1-187.

——— Department of Agriculture, N.A. Fauna, Bulletin, No. 22.

——— Department of Agriculture, Year Book for 1901.

——— Smithsonian Institution.—Bureau of American Ethnology, Bulletin 26, Kathlamet Texts, by F. Boaz; U.S. National Museum, Bulletin No. 52.

——— United States Geological Survey.—Annual Report for 1899-1900, parts 5 and 7; Bulletins Nos. 177-190, 192-4; Geological and Mineral Resources of the Copper River District, Alaska; Map of United States of America, 43 Topographical Sheets; Mineral Resources for 1900; Monographs, vols. 41-43. Professional Papers, Series A-B, Geology, Nos. 1-3; Series H, Forestry, Nos. 4-8; Reconnaissances in the Cape Nome and Norton Bay Regions, Alaska, in 1900.

LIST OF FELLOWS, MEMBERS, &c.

NOVEMBER, 1903.

Those marked (F) were present at the first meeting when the Society was founded. Those marked (L) are Life Fellows. Those marked with an asterisk have contributed papers published in the Society's Transactions.

Any changes in the addresses should be notified to the Secretary.

Date of Election

HONORARY FELLOWS.

1893. *COSSMAN, M., Rue de Maubeuge, 95, Paris.
1897. *DAVID, T. W. EDGEWORTH, B.A., F.R.S., F.G.S., Prof. Geology Sydney University.
1888. *DENNANT, JOHN, F.G.S., F.C.S., Inspector of Schools, Camberwell, Victoria.
1876. ELLERY, R. L. J., F.R.S., F.R.A.S., Gov. Astron., the Observatory, Melbourne, Victoria.
890. *ETHERIDGE, ROBERT, Director of the Australian Museum of N.S., Wales, Sydney.
1893. GREGORIO, MARQUIS DE, Palermo, Sicily.
1855. HULL. H. M., Hobart, Tasmania.
1892. *MAIDEN, J.H., F.L.S., F.C.S., Director Botanic Gardens, Sydney, N.S. Wales.
1898. *MEYRICK, E. T., B.A., Elmswood, Marlborough, Wilts, England.
1876. RUSSELL, H. C., B.A., F.R.S., F.R.A.S., Gov. Astron., Sydney, N.S. Wales.
1894. *WILSON, J. T., M.D., Prof. of Anatomy, Sydney University.

CORRESPONDING MEMBERS.

1881. BAILEY, F. M., F.L.S., Colonial Botanist, Brisbane, Queensland.
1881. *CLOUD, T. C., F.C.S., Manager Wallaroo Smelting Works, S.A.
1880. *FOELSCHE, PAUL, Inspector of Police, Palmerston, N.T.
1893. *McKILLOP, REV. DAVID, Daly River Mission, N.T., Australia.
1886. NICOLAY, REV. C. G., Fremantle, W.A.
1883. *STIRLING, JAMES, Gov. Geologist, Victoria.
1893. *STRETTON, W. G., Palmerston, N.T., Australia.

FELLOWS.

1874. ANGAS, J. H., Collingrove, Angaston.
1895. *ASHBY, EDWIN, Royal Exchange, Adelaide.
1902. BAKER, W. H., Glen Osmond Road, Parkside.
1893. *BEDNALL, W. T., *Register* Office, Adelaide.
1887. *BLACKBURN, REV. THOS., B.A., Woodville.
1901. BOAS, J. H., B.Sc., Charters Towers, Queensland.
1886. *BRAGG, W. H., M.A., Prof. of Mathematics, University of Adelaide, S.A.

1883. Brown, H. Y. L., F.G.S., Gov. Geol., Adelaide, S.A.
1882. Browne, L. G., Davenport Chambers, Currie-street, Adelaide.
1899. Browne, T. L., Marlborough Chambers, Waymouth-st., Adelaide.
1897. Browne, J. Harris, Adelaide.
1893. Brummitt, Robert, M.R.C.S., Gilberton.
1879. *Cleland, W. L., M.B., Ch.M., J.P., Colonial Surgeon, Resident Medical Officer Parkside Lunatic Asylum, Lecturer in Materia Medica, University of Adelaide.
1895. Cleland, John B., M.D., Ch.B., Parkside.
1876. (L) Cooke, Ebenezer, Commissioner of Audit, Adelaide.
1895. Cooke, John H., Edmund-street, Unley.
1887. *Dixon, Samuel, Bath-street, New Glenelg.
1896. Drummond, J. H. G., M.D., Pangarinda, Semaphore.
1893. Dudley, Uriah, White Rock S.M., Drake, N.S.W.
1890. *East, J. J., F.G.S., Western Australia.
1902. Edquist, A. G., Hindmarsh.
1899. Fergusson, Andrew, School of Mines, Adelaide.
1886. Fleming, David, 24, Buxton-street, North Adelaide.
1889. Fraser, J. C., Adelaide.
1880. *Goyder, Geo., F.C.S., Analyst and Assayer, Adelaide.
1896. Greenway, Thos. J., Chillagoe, Queensland.
1896. Hawker, E. W., F.C.S., Adelaide.
1899. *Higgin, A. J., Assist. Lecturer on Chemistry, University of Adelaide.
1891. *Holtze, Maurice, F.L.S., Director Botanic Gardens, Adelaide.
1883. *Howchin, Walter, F.G.S., Lecturer on Geology and Palæontology, University, Adelaide.
1901. Haslam, J. A., B.Sc., Registrar of the School of Mines and Industries, Adelaide.
1902. Iliffe, Jas. Drinkwater, B.Sc., Prince Alfred College, Adelaide.
1893. James, Thomas, M.R.C.S., Moonta, S.A.
1900. *Johncock, Chas. F., Morphett Vale.
1902. Jeffreys, Geo., School of Mines, Adelaide.
1899. Kleeman, Richard, the University, Adelaide.
1898. *Koch, Max, Port Pirie.
1884. Lendon, A. A., M.D. Lond., M.R.C.S., Lecturer on Forensic Medicine and on Chemical Medicine, the University, and Hon. Physician Children's Hospital, North-terrace, Adelaide.
1856. *Lloyd, J. S., Pirie-street, Adelaide.
1897. *Lea, A. M., Govt. Entomologist, Hobart, Tasmania.
1888. *Lower, O. B., Broken Hill, N.S.W.
1874. Mayo, G. G., C.E., Tatham-street, Adelaide.
1897. *Morgan, A.M., M.B., Ch.B., Angas-street, Adelaide.
1884. Munton, H. S., North-terrace, Adelaide.
1859. (L) Murray, David, Adelaide.
1883. Phillipps, W. H., Adelaide.
1886. Poole, W. B., Savings Bank, Adelaide.
1892. *Priestley, P. H., Parkside.
1885. *Rennie, Edward H., M.A., D.Sc. Lond, F.C.S., Professor of Chemistry, University of Adelaide.
1869. *Rutt, Walter, Chief Assistant Engineer, Adelaide.
1891. Selway, W. H., the Treasury, Adelaide.
1893. Simson, Augustus, Launceston, Tasmania.
1857. *Smeaton, Thos D., Blakiston, S.A.
1900. Smeaton, Stirling, B.A., C.E., Engineer-in-Chief's Office, Adelaide.
1871. Smith, Robt. Barr, Adelaide.

1881. *Stirling, Edward C., C.M.G., M.A., M.D., F.R.S., F.R.C.S., Professor of Physiology University of Adelaide, Director of S.A. Museum.
1886. *Tepper, J. G. O., F.L.S., Entomologist S.A. Museum.
1897. *Torr, W. G., LL.D., M.A., B.C.L., Brighton.
1894. *Turner, A Jefferis, M.D., Brisbane, Queensland.
1889. Vardon, Hon. Joseph, M.L.C., J.P., Adelaide.
1878. *Verco, Joseph C., M.D., F.R.C.S., Lecturer on the Principles and Practice of Medicine and Therapeutics, University of Adelaide.
1902. Vandenbergh, W. J., Barrister and Solicitor, J.P., Pirie-street, Adelaide.
1883. Wainwright, E. H., B.Sc., Lond., St. Peter's College, Adelaide.
1878. Ware, W. L., J.P., Adelaide.
1859. Way, Rt. Hon. Sir Samuel James, Bart., D.C.L., Chief Justice and Lieutenant-Governor of South Australia, Adelaide.
1902. Woolnough, Walter George, B.Sc., F.G.S., Lecturer on Mineralogy and Petrology, University of Adelaide.
1886. *Zietz, A. H. C., F.L.S., C.M.Z.S., Assistant Director South Australian Museum, Adelaide.

ASSOCIATES.

1901. *Basedow, Herbert, Adelaide.
1901. Collison, Edith, B.Sc., Jeffcott-street, North Adelaide.

APPENDICES.

FIELD NATURALISTS' SECTION

OF THE

Royal Society of South Australia

TWENTIETH ANNUAL REPORT OF THE COMMITTEE,

FOR THE YEAR ENDING 30TH SEPTEMBER, 1903.

Evening Meetings.—Eight evening meetings have been held, at which the undermentioned papers have been read :—

1902.

Oct. 28—Preparation of Natural History specimens, J. G. O. Tepper, F.L.S., and F. R. Zietz.

Dec. 16—The Fauna and Flora of South Africa, Capt. S. A. White.

1903.

April 21—British and Continental Museums, Dr. E. Angas Johnson; Natural History Notes from the South-East, Mr. Jas. Aitken.

May 19—(Paper postponed on account of inclement weather).

June 23—Gems and Precious Stones, W. G. Woolnough, B.Sc.

July 21—Australia's Great Artesian Basin, S. Smeaton, B.A.

Aug. 18—The Shape of Trees, J. G. O. Tepper, F.L.S.

Sept. 15—Annual Meeting.

The attendance at these meetings has been fairly well maintained. The subjects submitted at the evening meetings have been very varied, but Botany, Geology, and Zoology have been the most favoured. Some useful practical hints on the preparation and preservation of Natural History specimens have been furnished. Exhibits have, as usual, formed an interesting feature of the evening meetings.

Amongst these were included plants, shells, butterflies, minerals

aboriginal implements and ornaments, geological specimens from the River Inman, a special collection of flowers and grasses from Central Australia; kaolinized clay, which is likely to create a new industry in the finer branches of pottery-ware; Coorongite, denizens of the sea as well as fresh water pools, the flower of the Indian bamboo, and many other specimens.

The very handsome orchid, *Dipodium punctatum*, from Summertown,, was shown as an exhibit at one of the meetings.

The members were indebted to Capt. S. A. White for a most interesting paper on the Fauna and Flora of South Africa.

Excursions.—There have been eleven excursions held during the year, of which the following is a list :—

1902.	LOCALITY.
Oct. 18	Coromandel Valley and River Sturt.
Nov. 8-10	(Three days) Blumberg and Mount Crawford, &c.
Dec. 13	Summertown (Mr. J. Johnson's Garden).
1903.	
March 28	Dredging, Port River.
April 18	The Grange.
May 16	Longwood Gully (clay deposits).
June 20	Black Hill.
July 18	Henley Beach to Glenelg.
Aug. 15	Blackwood.
Sept. 1	(Whole day) Houghton and Highercombe.
Sept. 19	Horsnell's Gully and Norton's Summit.

The most noteworthy of the above was the three days excursion in November, 1902, when Blumberg, Mt. Crawford, and the hills between Mt. Torrens and Norton's Summit, as well as the cyanide works at Mt. Torrens, were visited. Probably owing to the previous hot weather, not much was found in a botanical way, but the mineral country near Mt. Crawford and the S. Para River afforded much scope for interesting investigations. The pleasure of the excursion was enhanced by the hospitality of the Hon. John Warren, M.L.C., and Mr. Alex. Murray, as well as by the efforts of Mr. T. Pflaum and other Blumberg residents. The next longest trip was that to Longwood Gully, where the fine exposure of white clay deposit was a novel feature to most of the party. At the close of the afternoon inspection Mrs. and the Misses Tomkinson thoughtfully provided afternoon tea for the party. According to the season, the hills or seaside have been visited. The excursion to Houghton on Sept. 1, was a pleasant holiday trip, thanks largely to the assistance of Mr. H. J. Armitage. On the same occasion the courtesy of Mr. W. Goodwin in permitting the inspection of the fine old

property, known as Highercombe, added to the pleaaure of th outing.

Black Hill has been revisited as well as Blackwood, the latter furnishing the best results so far as the collecting of orchids is concerned. On this occasion the Section was indebted to a former chairman, Mr. E. Ashby, for his guidance and hospitality. Ornithology, neither at the indoor nor outdoor meetings, has received much attention during the year, a separate organization now dealing with that branch of Natural History. Conchology has not been neglected, and a dredging trip was also included in the list of excursions. The members had a change from their usual researches into Nature in its wild state when they visited the extensive market garden of Mr. J. Johnson, of Summertown, who to a practical object lesson in successful vegetable growing, added an equally practical exhibition of rural hospitality. Except when adverse weather conditions prevailed, the attendance at the excursions has been well sustained.

Native Fauna and Flora Protection.—A separate report is presented from this Committee, and it is gratifying to observe that the kangaroo is being again protected on Kangaroo Island, this time for a period of five years.

Rules.—Owing to the Incorporation of the Royal Society the Rules of the Section had to be submitted for approval. and those already in print were accepted by the parent body with slight modification as to the constitution of the committee.

Obituary.—The Committee record with much regret the death (on 2nd December, 1902) of Mr. J. W. Bussell, who was a member of the Section almost from its inception, had held office as Vice-Chairman and Auditor, and frequently assisted by the loan of his microscope and lantern.

Financial.—The receipts from subscriptions have been £14 10/, and the disbursements amount to £11 6/. The former sum has been handed over, in conformity with the rules, to the Royal Society, which has given the section a grant of £10. There are rather more arrears of subscriptions due than usual, and members would save the Hon. Secretary time and trouble if they would remit more promptly the small sum charged as subscriptions to the Section.

Membership.—There has been a greater acquisition of new members than for some years past, while considerably fewer names have been struck off during the year. The number now on the roll is 74.

E. Angas Johnson, Chairman.
W. H. Selway, Hon. Secretary.

Adelaide, 14th September, 1903.

FIFTEENTH ANNUAL REPORT OF THE NATIVE FAUNA AND FLORA PROTECTION COMMITTEE OF THE FIELD NATURALISTS' SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Attention having lately been directed to the destruction of kangaroos upon Kangaroo Island since the expiration of the term of years during which they were protected, your Committee were pleased to see a statement that in Executive Council, on Wednesday, 9th September, a proclamation was made, further protecting these animals for a period of five years.

Mr. Herbert, M.P., has lately introduced a Bill for the Amendment of the Birds Protection Act, to authorise the alteration of the close season for the Northern Territory, which now is the same as that for South Australia proper, while the breeding seasons for birds in the North and South differ greatly, and your Committee (hoping there may be an opportunity of introducing some further amendments, enabling land owners, who desire to do so, to fully protect the birds on their property from injury or destruction by trespassers) are taking steps accordingly.

EDWIN ASHBY, Acting-Chairman.
M. SYMONDS CLARK, Hon. Secretary.

Adelaide, September 14, 1903.

FIELD NATURALISTS' SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Receipts and Payments for the Year 1902-3.

Dr. Receipts.	£	s.	d.	Cr. Payments.	£	s.	d.
To Balance brought forward	5	11	5	By Postages	4	5	0
" Subscriptions	14	10	0	" Printing, &c.	4	1	6
" Grant from Royal Society	10	0	0	" Compensation for Loss of Dredge	1	5	0
				" Attendance	1	0	0
				" Advertising	0	14	6
					11	6	0
				" Subscriptions as per contra paid over to Royal Society	14	10	0
				" Balance in hand	4	5	5
	£30	1	5		£30	1	5

Audited and found correct.

J. S. LLOYD,
WALTER D. REED, } Auditors.

Adelaide, 14th September, 1903.

W. H. SELWAY,
Hon. Secretary and Treasurer.

MALACOLOGICAL SECTION.

ANNUAL REPORT FOR 1902-3.

The membership of the Section numbers 13, showing an increase of one during the year. Twelve meetings have been held. The work done has included a revision of the existing lists of South Australian mollusca. The classification followed has been that of the latest (English) edition of Zittel's Palæontology. The lamellibranchs and scaphopods have been passed in review, consideration of the amphineura has been deferred, and the Section is now dealing with the gastropods.

The officers elected for 1903-4 are Dr. Verco, Chairman, and R. J. M. Clucas, Hon. Secretary.

ROBERT J. M. CLUCAS, Hon. Secretary.

November 27, 1903.

Royal Society of South Australia

(INCORPORATED).

RULES.

Name.

1. The title of the Society is the "Royal Society of South Australia (Incorporated)."

Objects.

2. The objects of the Society are the promotion and diffusion of science by meetings for the reading and discussion of papers and other methods.

Constitution.

3. The Society shall be constituted of the persons whose names have been duly enrolled as members, and who have not ceased to be members.

4. His Excellency the Governor of South Australia for the time being shall be requested to be the Patron of the Society.

5. Members shall be classed as Fellows, Honorary Members, Corresponding Members and Associates.

Management.

6. The general management of the affairs of the Society, together with the custody of its property, shall be vested in a Council of eleven Fellows, comprising a President, two Vice-Presidents, a Treasurer, a Secretary, and six other Fellows to be elected as hereinafter provided.

7. The exercise of any power vested in the Council may be controlled by the Society in general meeting.

8. Four members of the Council shall form a quorum, and may transact any business which the Council is authorised to transact.

9. In addition to any other powers hereby conferred upon them the Council shall—

Convene all meetings of the Society and determine what papers are to be read, and generally what business is to be transacted at such meetings:

Determine as to the publication in whole or in part of any paper so read:

Elect a member of Council to represent the Society on the Board of Governors of the South Australian Public Library, Museum, and Art Gallery of South Australia:

Receive the revenues and other moneys of the Society, and apply the same in furtherance of its objects, or as may be specially directed by the Society:

Provide for the safe custody of the seal, the original papers, and all other property of the Society:

Enter into and execute all contracts and engagements of the Society:

Prepare the annual report and balance-sheet:

Regulate the meetings of the Council as a majority thereof shall determine.

Members.

10. Members may be elected as hereinafter provided.

11. Fellows and Associates shall pay such subscriptions as may be prescribed.

12. Persons distinguished for their attainments in science may be elected as Honorary Members.

13. Persons who ordinarily reside more than ten miles from Adelaide, and who, by furnishing papers, or otherwise, have, in the opinion of the Council, promoted the objects of the Society, may be elected Corresponding Members.

14. Honorary Members and Corresponding Members shall not be liable for subscriptions.

15. Young men of not more than twenty-one years of age and ladies may be Associates.

Election of Members.

16. Every candidate for membership must be nominated in the prescribed form by two Fellows.

17. The nomination paper shall be lodged with the Secretary with the prescribed subscription (if any), and shall be submitted to the Council and the Society at their first following meetings, and the election shall be held at the next subsequent meeting not being a special meeting of the Society.

18. No person shall be eligible for election as an Honorary or Corresponding Member unless recommended by the Council.

19. Elections shall be by ballot, one negative in six excluding.

20. A candidate who has been so excluded shall not be eligible to be again nominated within one year of such exclusion.

21. An Associate shall be entitled to be enrolled as a Fellow upon signing an application in due form and paying the prescribed subscription.

22. Every person admitted shall have immediate notice thereof transmitted to him by the Secretary, accompanied by a copy of the rules, and shall be enrolled as a member.

Cession of Membership.

23. A member may resign his membership at any time by notice in writing to the Secretary, and shall thereupon cease to be a member.

24. If any Fellow or Associate whose subscription shall be more than twelve months in arrear shall fail to pay the same after application in writing by the Secretary therefor, the Council may cancel his membership, and he shall thereupon cease to be a member.

Restoration.

25. The Council may upon such terms as it shall think fit re-enrol as a member any person who shall have ceased to be a member.

Election of Council.

26. At each annual meeting the President and all other officers (except the Secretary) and two of the Fellows on the Council shall retire from office, and their places shall be filled by election, which if any Fellow shall so require shall be by ballot.

27. The Fellows to retire shall be those who have been longest in office since last election, or, in case of equal tenure of office, shall be decided by lot.

28. The Secretary shall hold office during the pleasure of the Society.

29. Retiring officers and Fellows shall be eligible for re-election.

30. If a member of the Council shall without leave or some reason which the Council shall consider sufficient absent himself from three consecutive meetings of the Council he shall be deemed to have vacated his office.

31. Every casual vacancy in the Council shall be filled up at the next meeting of the Society by election by ballot.

Seal and Sealholder.

32. The Common Seal shall have the name of the Society inscribed upon it, and shall be held by the Secretary, who

shall for the purposes of the Act be deemed to be the Seal holder.

The Council shall have power to use the seal in the execu tion of any powers hereby vested in them or otherwise in relation to the affairs or business of the Society. The seal shall never be used except by the authority of the Council. At least two members of the Council and the Secretary shall sign every instrument to which the seal is affixed.

Meetings of the Society.

33. A meeting of the Society, to be called the Annual Meeting, shall be held in the month of October in every year upon a day and at a place to be appointed by the Council.

34. At the annual meeting the Council shall submit a report and duly audited balance-sheet, and the meeting shall elect the officers and members of Council for the ensuing year and transact any other business of which due notice has been given.

35. The Council may convene an ordinary meeting of the Society at any time.

36. The Council may at any time, and shall upon the requisition in writing of seven Fellows, specifying the purpose for which the meeting is required, convene a special meeting of the Society. The special business for which the meeting has been convened, and none other, shall be transacted at such meeting.

37. A Fellow may introduce two visitors at any meeting, other than a special meeting, upon entering their names in the visitors' book. Visitors shall not speak unless invited to do so by the Chairman.

38. Honorary and Corresponding Members and Associates shall not be entitled to vote at any meeting or take part in the business of the Society.

39. Seven Fellows shall be a quorum. If at any meeting a quorum is not present within thirty minutes after the hour of meeting, the meeting shall stand adjourned to a day and time to be appointed by those present, not being earlier than seven days. At the adjourned meeting the Fellows then present may proceed to business although a quorum may not be present.

40. Three day's notice at least shall be given of every meeting or adjourned meeting and of the principal items of business to be transacted thereat.

41. Notice shall be given to the members resident in South Australia by circular or in such other manner as may be prescribed.

Auditor.

42. Two Fellows not being members of the Council shall be chosen at some meeting of the Society prior to the annual meeting in each year to audit the accounts and balance-sheet for the then current year.

By-laws.

43. The Council may make, repeal, alter, and vary by-laws for regulating the—

Subscriptions to be paid and the officers to whom they are to be paid:

Forms to be used:

Procedure at meetings:

Requisites of papers to be read at meetings:

Notice to be given of meetings:

Encouragement to be given by the Society by means of medals, prizes, or otherwise for the promotion of science:

Determine the duties of the Treasurer, Secretary, and other officers:

And generally for the better carrying out the objects and purposes of the Society.

44. No by-law or repeal, alteration, or variation of any by-law shall have any validity unless approved by a majority of the Fellows present at a meeting of the Society of which due notice has been given.

45. The Society may by a majority of at least two-thirds of the Fellows present at an annual meeting or at any special meeting duly convened for the purpose make any rule or repeal, alter, or vary any existing rule.

46. In the construction of the rules of the Society, unless the subject or context requires a different meaning:

"Prescribed" means prescribed by by-law:

Words denoting the singular number only shall be deemed to include the plural and vice versa. Words denoting the masculine gender shall be deemed to include the feminine.

47. All rules and by-laws of the Society heretofore in force are hereby repealed.

BY-LAWS.

Section I.—Subscriptions.

1. Fellows shall subscribe £1/1/ per annum.

2. A Fellow may at any time compound for future annual subscriptions, exclusive of that for the current year, by the payment of fifteen guineas.

3. Associates shall subscribe five shillings per annum.

4. All subscriptions shall be payable in advance immediately after the annual meeting to the Treasurer, who shall give a receipt for the same on a printed form.

Section II.—Meetings of the Society.

1. Meetings shall be held on the first Tuesday in each month, at 8 p.m., in the Society's Rooms, unless the Council shall otherwise decide, and shall be convened by circular posted to the last known address of the members resident in the State. The circular shall state the subjects to be brought before the Society the names of candidates for membership, and any notices of motion.

2. The President, or, in his absence, one of the Vice-Presidents, shall take the chair; and in the event of the absence of all the above the members present shall elect a Chairman.

3. The business shall be transacted in the following order, unless it be specially decided otherwise by the meeting:

(*a*) Reading and confirmation of the minutes of the last meeting.
(*b*) Election of members.
(*c*) Nomination of candidates for membership.
(*d*) Consideration of motions of which notice has been given.
(*e*) Reading of notices of motions for subsequent meetings.
(*f*) Consideration of any special matters which members may desire to bring forward, subject to the approval of the Chairman obtained before the commencement of the meeting.
(*g*) Any other business brought forward by the Council.
(*h*) Exhibits and papers notified in the circular. (These shall be called on not later than half-past 8, unless otherwise decided by the meeting.)

Section III.—Papers.

1. No paper shall be read at any meeting which has not been previously approved by the Council, and every paper read before the Society shall be the property thereof, and immediately it has been read shall be delivered to the Secretary, and shall remain in his custody.

2. The Council shall decide whether any paper shall be printed. If not printed, either in whole or in part, it shall be returned to the author if he so desire.

3. All papers and other contributions printed in the Society's Transactions shall be subject to editing by an editor appointed by the Council.

4. The author of any paper printed by the Society shall be entitled to receive 25 copies free of cost, and may obtain additional copies on payment of cost of printing the same.

Section IV.—Sections.

1. With the consent of the Council, Sections may be formed in connection with the Royal Society for the special study of particular branches of natural or applied science.

2. Such Sections shall consist of—

(*a*) Members of the Royal Society who join the Section and pay the annual subscription to the Section.

(*b*) Other persons who have been regularly elected, and who pay the annual subscription to the Section.

3. Members of the Royal Society who join any Section shall not be required to pay any entrance-fee, and the annual subscription paid by them shall not exceed one-half of that paid by non-members of the Society

4. Each Section shall elect its own Committee of Management.

5. The President and Vice-Presidents of the Royal Society for the time being shall be *ex officio* members of the Committee of Management of all Sections.

6. The rules and regulations for the management of Sections shall not have any effect until they have been formally approved by the Council of the Royal Society.

7. Subscribers to the Sections shall have access to the library of the Royal Society, subject to such regulations as may be made by the Council.

8. The Committee of Management of each Section shall, on or before September 30 of each year, furnish to the Council

of the Royal Society an annual report of the proceedings of the Section, with a balance-sheet for publication (subject to the approval of the Council) in the Society's annual volume. A copy of such report and balance-sheet shall be given to each member of the Section whose subscription for that year has been paid.

9. Sections shall be allowed the use of the Society's room at such times as may be approved by the Council.

10. All subscriptions received by any Section shall be paid to the Treasurer of the Society on or before September 30 in each year.

11. Grants of money may be made by the Council to any Section out of the general funds of the Society.

(Signed) THOS. BLACKBURN,
Vice-President.

June 16, 1903.

GENERAL INDEX.

[Generic and specific names printed in italics are described as new]

Aboriginal occupation of Kangaroo Island, 90, 314; implements, 310.
Acacia salicina, analysis of ash of, 202.
Acanthocoles, 25; *A. eucesta*, 26.
Acompsia *mesozona*, 225.
Acropteris justaria, 18; nanula, 18.
Acronycta *psorallina*, 31.
Agriophara *tephroptera*, 230.
Amaloptila triorbis, 6.
Amphicrossa hemadelpha, 198.
Amyna *spilonota*, 34.
Analysis of ash of Acacia salicina, 202.
Anerastia *minoralis*, 52; *xiphimela*, 52.
Angelia, 193; A. *callisarca*, 194; heteropa, 194; platydesma, 194; *tephrochroa*, 194.
Annual Meeting, 315; Report, 316.
Anthela rubicunda, 216.
Anthremus, 172.
Antiporus collaris, 92.
Apodecta monodisca, 24.
Archæocyathinæ, pebble containing, 313.
Archernis *argocephala*, 64.
Argyrolepidia *unimacula*, 29.
Aristeis *macrotricha*, 225.
Arotrophora *cosmoplaca*, 219.
Asphaltum in Kangaroo Island, 86, 313, 315.
Atychia *mesochrysa*, 68; episcota, 68.
Augomela ignita, 309.
Aulacodes *triplaga*, 62.
Avitta *eurrhoa*, 47.
Balance Sheet, 318.
Bitumen, occurrence of, in Kangaroo Island, 86, 313, 315.
Blackburn, Rev. Thos., Australian Coleoptera, 91, 261.
Bleptina *odontias*, 44.
Boarmia *xylotrema*, 29.
Borkhausenia *callioptis*, 226.
Brachysphyrus, 160; *B. irroratus*, 160.
Byrrhus raucus, see Pedilophorus, 173.
Buciara bipartita, 3.
Cæsyra *maculopa*, 224.
Canthylidia eodora, 3.
Caradrina *acallis*, 4; (?) *lophota*, 31; *poliocrassa*, 5; pudica, 31; reclusa, 4.
Caragola clara, 16.
Carea *plagioscia*, 7.
Callyna *leuconota*, 35.
Capnodes *niphomacula*, 41.
Cathartus (?), 150; C. *cairnsensis*, 151.
Ceratotrochus *clinatus*, 213.
Cercyon nigriceps, 93.
Cerylon *alienigenum*, 133.
Choleva australis, 95; *macleayi*, 94; victoriensis, 95.
Cholevomorpha *atropos*, 96; (?) *extranea*, 96; *koebelei*, 95.
Chrysorytis *heminephela*, 238; *hemisema*, 238.
Churia *thermodes*, 34.
Cirrhochrista *cyclophora*, 50.
Clambus *tropicus*, 97.
Clathe albicans, 24; anthracica, 24.
Clupeosoma (?) *mimetica*, 65.
Coenotoca monophyes, 2.
Coleoptera, New species of, 91, 261.
Colon melbournense, 95.
Colussa connexa, 17; denticulata, 16.
Coorongite, Remarks on, 313.
Coptodactyla *ducalis*, 263; glabricollis, 262.
Corals, New species from Australian Tertiaries, 208.
Corula *hypotherma*, 40; *ischnodes*, 10; (?) *mesoleuca*, 39.
Crambus *photoleuca*, 51.
Criophthona *trileuca*, 66.
Cruria (?) *hemiphragma*, 30; (?) *placodes*, 30; synopla, 1.
Cryptamorpha optata, 152; *peregrina*, 153; triguttata, 153.
Cryptarcha *elegantior*, 116; *subnigella*, 117.
Cryptophaga *diplosema*, 199; *gypsomera*, 70; *melanoscia*, 198.
Cryptophagus *nigro-apicalis*, 156.
Cryptorhopalum, 166; Table of, 168; C. australe, 169; *casuarinæ*, 169; *ceciliense*, 170; *eucalypti*, 171; *nealense*, 170; *quadrifasciatum*, 171; *terzonatum*, 171.
Ctenocampa baliodes, 231.
Curramulka, Glacial pebble from, 310.
Cymatophoropsis *catagrapha*, 7.
Darantasia *perichroa*, 187.
Dennant, J., New Australian Corals from Tertiary, 208.
Deretaphrus, 120; *æqualiceps*, 127; bakewelli, 123; *cordicollis*, 125; *cribriceps*, 128; *gracilis*, 124; granulipennis, 129; *iridescens*, 124; *popularis*, 126; *sparsiceps*, 127; *thoracicus*, 122; viduatus, 129.
Dermestes australis, 160.
Dermestidæ, Table of, 159.
Dichromodes *aristadelpha*, 190; orthozona, 189.
Dierna *achroa*, 35.
Dineutes rufipes, 93.
Diphthera *beryllodes*, 5.
Diphyllus *ornatellus*, 156.
Diplocoelus fasciatus, 157; *opacior*, 158; ovatus, 157; piliger, 157; punctatus, 157; Table of, 158.

Dirades decorata, 22; leucocephala, 22; mutans, 21; *platyphylla*, 21; *stereogramma*, 22.
Donations to the Library, 330.
Egnasia *psammochroa*, 41.
Elasmocerus picticollis, see under Macrotelus, 307.
Eldana *leucostictalis*, 50.
Eligma *orthoxantha*, 27.
Endotricha *desmotoma*, 60; *pyrocaustalis*, 60.
Entometa rufescens, 24.
Epicoma argentata, 23; asbolina, 23.
Epiplema *argillodes*, 19; coeruleotincta, 18; conflictaria 19; inclarata, 20; *oxytypa*, 19; *xylinopis*, 20.
Erastria onthodes, 32.
Essonistis micræola, 12.
Etiella *holozona*, 57.
Eublemma hemirhoda, 12.
Eucalyptiocola marcida, 91.
Eucalyptus odorata, 240; bicolor, 245; calcicultrix, 242; cajuputea, 242; erythrandra, 243; erythrostoma, 243; leucoxylon, 246; leucoxylon, *var.* pluriflora, 244; melliodora, 246; perforata, 243; polybractea, 244; porosa, 243; viridis, 244; woollsiana, 244.
Euchloris *dichroa*, 217.
Eudrymopsis, 228; E. *xyloscopa*, 228.
Eulechria *atradelpha*, 221.
Euproctis edwardsi, 16; *pycnadelpha*, 28.
Eusynopa, 237; E. chrysogramma, 238.
Euzopherodes *allocrassa*, 57.
Exangeltus *gracilior*, 308.
Fellows, List of, 338.
Field Naturalists' Section, 341.
Fisheries of Australia, 319.
Fodina *chrysomera*, 39.
Fossil Resins in Kangaroo Is., 86.
Gadirthra *hades*, 36.
Gartrell, H. W., Port Victor Granite, 256
Gastrinopa, 197; G, *xylistis*, 197.
Gems in Kangaroo Is., 83, 311, 313.
Geology of Kangaroo Is., 75.
Glacial evidences in Kangaroo Is., 75.
Glacial pebble, Curramulka, 310.
Grammodes *callixeris*, 38; ocellata, 216; pulcherrima, 216.
Granite, Port Victor, 256.
Guestia *amydrosema*, 227; *isclnota*, 226.
Gypsum deposits near Glenelg, 311.
Hamodes *pseudoptera*, 37.
Haplopseustis erythrias, 16.
Haptoncura, 112; H. *brightensis*, 113; *darwinensis*, 115; *eyrensis*, 115; *nelsonensis*, 114; *sloanei*, 113; *sparsior*, 114; Table of species, 116.
Heliocausta *episarca*, 220; *pericosma*, 220.
Heliothis punctifera, 3.
Heracula *leonina*, 17.
Heteroceridæ, 177.
Heterocerus, 177; Table of, 178; H. *debilipes*, 179; flindersi, 180; indistinctus, 180; *largsensis*, 178; multimaculatus, 180; victoriæ, 180.
Heterographis *molybdophora*, 57; proleuca, 58.
Higgin, A. J., Analysis of Ash of Acacia salicina, 202. (See also Rennie and Higgin).
Hololepta australica, 101.
Homæosoma (?) melanosticta, 58.
Hoplitica *rhodopepla*, 221.
Howchin, W., Geology of Kangaroo Is., 75.
Hyblaea ibidias, 15.
Hypena *gypsospila*, 14; *melasticta*, 49; (?) *rhynchophora*, 49.
Hypercydas, 23; H. *calliloma*, 23.
Hyperlopha *amicta*, 10.
Hypertricha ephelota, 201.
Hypocaccus, 107; H. *piscarinus*, 108; *vernulus*, 108.
Hypographa *cyanorrhœa*, 191.
Hypothripa polia, 7.
Hypycnopa, 183; H. *delotis*, 184.
Idalima, 1; I. hemiphragma, 216; placodes, 216.
Incorporation of Royal Society, 314.
Iphierga *crypsilopha*, 73; *polyzona*, 239.
Ipsaphes, 136; I. bicolor, 137.
Ischyja *polystigma*, 36.
Jocara thermoptera, 59.
Johncock, C. F. on Loranthus exocarpi, 253.
Kangaroo Island, Geology of, 75; Asphaltum on, 86, 313, 315; Aboriginal Occupation of, 90, 314; Gems from, 311, 313.
Labanda, *amabilis*, 47.
Laelia obsoleta, 16.
Læmophloeus, 138; Table of, 139.
L. articeps, 144; australasiæ, 146; *diemenensis*, 140; *insignior*, 143; *frenchi*, 146; lindi, 141; macleayi, 145; *murrayensis*, 141; pusillus, 144; *pusulæ*, 142; victoriæ, 182.
Lathropus *brightensis*, 147.
Lepidoptera, New Australian, 1, 183.
Lepidoscia *barysema*, 237; *eurystola*, 234; *melanogramma*, 71; *placoxantha*, 235; *polychrysa*, 235; *trileuca*, 235.
Leptomeris *isodesma*, 217.
Leucania *acontosema*, 4.
Library, Donations to, 330.
Limnœcia *xanthopetta*, 231.
Linosticha *amphileuca*, 222; *myriospila*, 222.
List of Fellows, Members, &c., 338.
Litocrus *maritimus*, 111.
Lobogethes interrupta, 23.
Loranthus exocarpi, 253.
Lower, O. B., New Australian Noctuina, &c., 27; Lepidoptera, 183; Xysmatodoma, 216.
Loxandrus *micantior*, 261.
Lygropia *chryselectra*, 64.
Macrogyrus fortissimis, 92; gouldi, 92; obliquatus, 92.
Macrotelus picticollis, 307.
Macrozygona microtonoma, 200.
Maiden, J. H., On Eucalyptus odorata, 240.
Malacological Section, 346.
Mamestra *xanthocosma*, 3.
Marapana *rhodea*, 15.
Marasmia *hexagona*, 63.
Mecistoptera *lithochroa*, 48.
Mecodina *asbolœa*, 42; *semophora*, 42.
Megatoma, 161.
Melissoblaptes *agramma*, 49.
Mesoptila anthracias, 184.
Metachrostis *sciaptera*, 44.
Metasia *ectodontalis*, 66; *phragmatias*, 66.
Microchætes, 174; Table of 174; M. *coloratus*, 176; *nigro-varius*, 175; *solidus*, 175.

Molopa planalis, 217.
Molvena guttalis, 6.
Molybdenite, Occurrence of, 312.
Monobolodes subfalcata, 21.
Morphnos besti, 92.
Morychus, 173.
Myrabolia, Table of, 148; M. grouvelleana, 150; haroldiana, 150; *longicollis*, 149.
Nacoleia *xanthoscota*, 63.
Natada ordinata, 24.
Natalis leai, 308.
Native Fauna and Flora Protection Committee, 344.
Native Implements, 310.
Narycia *callista*, 233; *campylota*, 233; *epichrysa*, 231; *epitricha*, 236; *euscia*, 234; *gastrometa*, 236; hyalistis, 232; *lasiomicra*, 234; *photidias*, 236; *semiota*, 232; trizona, 237.
Nearcha *oxyptera*, 188; pyrosema, 188.
Nephopteryx *dasyptera*, 55; *ereboscopa*, 54; *hades*, 54; *metasarca*, 56; *orthozona*, 53; thermalopha, 55.
Noctuina, New Australian, 27.
Noorda *metalloma*, 65; *molybdis*, 65.
Northern Territory, Volcanic dust from, 205.
Notonomus molestus, 92.
Nymphula *diplopa*, 62.
Ocystola *paralia*, 225.
Olene horsfieldi, 17; mendosa, 17.
Omosita discoidea, 262.
Onthophagus, 263; Tabulation of, 267, 300.
O. acuticeps, 302; atrox, 274; *aureoviridanus*, 289; australis, 285; bicornis, 284; *bovilli*, 278; capella, 280; capitosus, 280; *comperei*, 295; *cowleyi*, 272; crotchi, 303; decurio, 306; desectus, 278; discolor, 305; duboulayi, 306; *dumbrelli*, 297; emarginatus, 304; erichsoni, 282; evanidus, 304; fabricii, 305; fissiceps, 303; *fitzroyensis*, 288; *fletcheri*, 298; *frenchi*, 293; froggattii, 302; furaticeps, 302; glabratus, 284; granum, 304; *helmsi*, 290; henleyensis, 293; hostilis, 306; *howitti*, 282; humeralis, 306; incanus, 301; incornutus, 304; inermis, 295; integriceps, 301, 303; koebelei, 291; laminatus, 273; lobicollis, 302; lucidicollis, 303; *macleayi*, 289; macrocephalus, 279; *margaretensis*, 299; minusculus, 305; muticus, 295; *negatorius*, 297; ocelliger, 302; *palmerstoni*, 275; parallelicornis, 304; parvus, 286; patruelis, 306; perpilosus, 301; picipennis, 280; planicollis, 304; *pontilis*, 291; promptus, 305; propinquus, 306; *pugnacior*, 277; pugnax, 277; purpureicollis, 303; *queenslandicus*, 287; quinque tuberculatus, 274; rubescens, 305; rubicundulus, 302; rupicapra, 301; salebrosus, 303; schmeltzi, 279; *sloanei*, 276; *submuticus*, 294; *subocelliger*, 299; *sydneyensis*, 296; tabellicornis, 301-2; *tamworthi*, 292; thoreyi, 302; *tweedensis*, 285; *victorensis*, 293; vilis, 302; villosus, 302; viridiobscurus, 305; *zietzi*, 283.
Ophiusa *diagramma*, 37; *monogona*, 38.
Opsrrpina *cyclomela*, 183.
Opszyga, 230; O. eugramma, 230.
Oreta *miltodes*, 29.
Orgyia australis, 16.
Orthaga atribasalis, 219; seminivea, 219.
Pachytyla, 192; P. *doliopa*, 193.
Panilla *melanosticta*, 12.
Paracupta *bellicosa*, 181.
Paradirades assimilis, 22.
Paramelora, 195; P. lynchnota, 196; *zophodesma*, 195.
Paromalus honoratus, 102; miliaris, 102; *saucius*, 103; *terræ-reginæ*, 103; umbilicatus, 102; victoriæ, 102.
Pedilophorus, 173; P. raucus, 173.
Persicoptera *chionozyga*, 60.
Philobota *hemicroca*, 223; *ochrolitha*, 223; *oxysema*, 223.
Philonthus *glenelgi*, 94.
Phormesa *carpentariæ*, 118.
Phorticosomus *calcaratus*, 261.
Phycita *deltophora*, 53; *leucomilta*, 53.
Phyllocharis melanocephala, 309.
Pionea *achroa*, 218; *leucotypa*, 218; *leucura*, 67.
Placerobela, 13; P. *brachyphylla*, 14.
Placotrochus *inflectus*, 213; *pueblensis*, 212.
Platycotylus *coloratus*, 147.
Pleuropodia otwayensis, 214.
Polydesma *auriculata*, 9.
Port Victor Granite, 256.
President's Address, 319.
Prionophora rhodinastis, 217.
Procometis *periscia*, 200; *tetraspora*, 199
Proconis *eulophia*, 44.
Prorocopis *adelopis*, 45; *leucocrossa*, 46; *stenota*, 45.
Prostomis, Table of, 136; P. Atkinsoni, 133; cornutus, 135; *gladiator*, 135; intermedius, 134.
Psalis securis, 18.
Psammœcus *incertior*, 154; *T-notatus*, 154; *upsilon*, 155; *vittifera*, 155.
Psecadia *hemadelpha*, 227; *sciaptera*, 228.
Pseudaglossa sordescens, 12.
Pseudeba, 119; *novica*, 120.
Pseudomicronia discata, 18.
Pycnomerus, 130; Table of, 132; *interstitialis*, 131; obscurus, 131; *robusticollis*, 131; *sulcicollis* 132.
Pyrausta *epicroca*, 67; *petrosarca*, 68.
Quedius baldiensis, 94; *nelsonensis*, 93.
Raised sea area, Gypsum deposits of, 311.
Raparna *anthracias*, 185; *byrsopa*, 43; *marmorea*, 43.
Redoa transiens, 16.
Rennie, Prof., On Coorongite, 313; Fisheries of Australia, 319.
Rennie, Prof., and A. J. Higgin, Supposed Volcanic Dust from N. Ter., 205.
Rhynchopsota, 196; *R. delogramma*, 196.
Rivula niphodesma, 12.
Royal Society, Incorporation of, 314.
Rules and By-Laws, 347.
Sandava xylistis, 11.
Saprinus, 104; Table of, 105; *australasiæ*, 107; cyaneus, 107; lætus, 107; *tyrrhenus*, 106; *westraliensis*, 106; viridicupreus, 107; viridipennis, 107.
Saropla *poliochra*, 224.
Sarrothripa polycyma, 7.
Scaphisoma, Table of, 100; S. *fernshawense*, 99; *novicum*, 99; *perelegans*, 98; *queenslandicum*, 98.
Scardia *porphyrea*, 74; *xanthobapta*, 238.
Sciatrophes, 100; *S. latens*, 100.
Scioglyptis *trisyneura*, 192.

Seal "bullets," 314.
Silvanus, Table of, 152; S. *aridulus*, 151; brevicornis, 151; castaneus, 151; similis, 182.
Stauropus (?) *euryscia*, 28.
Stericta *aleuropa*, 59.
Stigmodera *subpura*, 307; *tyrrhena*, 306.
Talis *eremenopa*, 51; *stenipteralis*, 51.
Tarache *lunata*, 32; *micrastis*, 33; *neurota*, 33; nivipicta, 10.
Taxeotis *dasyzona*, 185; *holoscia*, 186; *xanthogramma*, 186.
Telecrates *streptogramma*, 229.
Telmatophilus *sublautus*, 158.
Tephris *glaucobasis*, 56.
Teretriosoma, 109; T. *gradile*, 110; *sorellense*, 111.
Teretrius *doddi*, 109.
Tertiary Corals, New species of, 208.
Thalamodes, 217.
Thaumaglossa, 166.
Thyas *amideta*, 8; *hicanora*, 9; reduncа, 8.
Tipasa asthenopa, 15; demonias, 15.
Tirathaba *chlorosema*, 219.
Todima *lateralis*, 118.
Tortricomorpha *leiochroa*, 69; *lichneopa*, 69; *monodesma*, 70; *stilbiota*, 69.
Tourmaline, Precious, from Kangaroo Island, 311, 313.
Tribalus, 104.
Trichophysetis *crocoplaga*, 61; *fulvifusalis*, 61.
Trissernis prasinoscia, 12.
Trochocyathus *adelaidensis*, 211; *infracompressus*, 209; *maplestonei*, 208; *planicostatus*, 210.
Trogoderma, 161; Table of, 162; T. *debilius*, 164; *exsul*, 164; lindense, 165; *longius*, 165; *maurulum*, 165; morio, 166; *tolarnense*, 163.
Trypanæus, 101.
Turner, Dr. A. J., New Australian Lepidoptera, 1.
Tyspanodes *metachrysialis*, 63.
Volcanic Dust from Northern Territory, 205; microscopical examination of, 207.
Woolnough, W. G., Examination of (?) Volcanic Dust from Northern Territory, 207.
Xanthoptera *albiceris*, 11; *crocodeta*, 11; *euchrysa*, 48; *macrosema*, 48.
Xenochlœna, 191; X. porphyropis, 192.
Xyleutes *acontucha*, 25; *coscinota*, 24.
Xylorycta *philonympha*, 229.
Xysmatodoma, New species of, 216; X. *hemicalyptra*, 72; *holozona*, 73; microzona 72; *retinochra*, 71.
Ypsolophus *lygropa*, 70.
Zagira *xylonota*, 34.
Zethes *blechrodes*, 13; *syndesma*, 40.

CONTENTS.

PAGE.

LOWER, O. B.: Descriptions of New Genera and Species of Australian Lepidoptera 183

HIGGIN, A. J.: An Analysis of the Ash of *Acacia salicina* 202

RENNIE, PROF., and A. J. HIGGIN: Notes on Supposed Volcanic Dust from the Northern Territory 205

WOOLNOUGH, W. G.: Microscopical Examination of Supposed Volcanic Dust from the Northern Territory 207

DENNANT, J.: Descriptions of New Species of Corals from the Australian Tertiaries. Plates I. and II. 208

LOWER, O. B.: Descriptions of New Species of Xysmatodoma, &c. ... 216

MAIDEN, J. H.: On *Eucalyptus odorata* 240

JOHNCOCK, C. F.: Notes on *Loranthus exocarpi* 253

GARTRELL, H. W.: The Port Victor Granite 256

BLACKBURN, REV. T.: Further Notes on Australian Coleoptera with Descriptions of New Genera and Species (XXXIII.) 261

ABSTRACT OF PROCEEDINGS 310

ANNUAL REPORT 316

BALANCE SHEET 318

PRESIDENT'S ADDRESS 319

DONATIONS TO THE LIBRARY 330

LIST OF FELLOWS, &C. 338

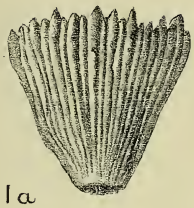
PROCEEDINGS, ANNUAL REPORT, AND BALANCE SHEET OF THE FIELD NATURALISTS' SECTION 341

REPORT OF THE NATIVE FAUNA AND FLORA PROTECTION COMMITTEE 344

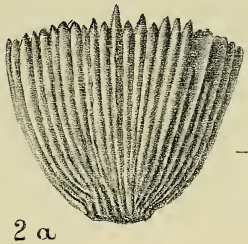
REPORT OF THE MALACOLOGICAL SECTION 346

RULES AND BY-LAWS OF THE SOCIETY 347

Vardon & Pritchard, Printers, Adelaide.



1 a

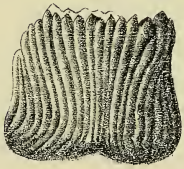


2 a

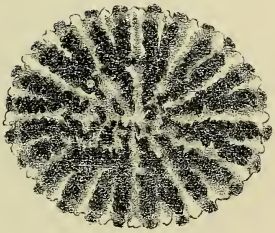
1 b

2 b

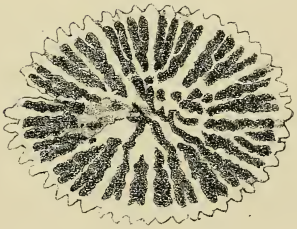
3 a



4 a



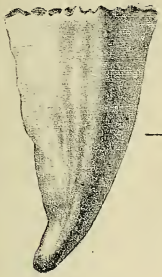
3 b



4 b

E. Trickett & J. Dennant, del. E.C.M. Lith.

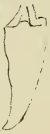
Vardon & Pritchard.



1a

1b

2a

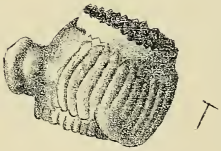


2b

2c

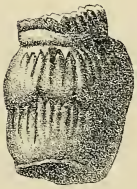
3a

3b



4a

4b



4c

4d

E. Trickett & J. Dennant, del. E.C.M. Lith.

Vardon & Pritchard.

3 2044 106 281 553